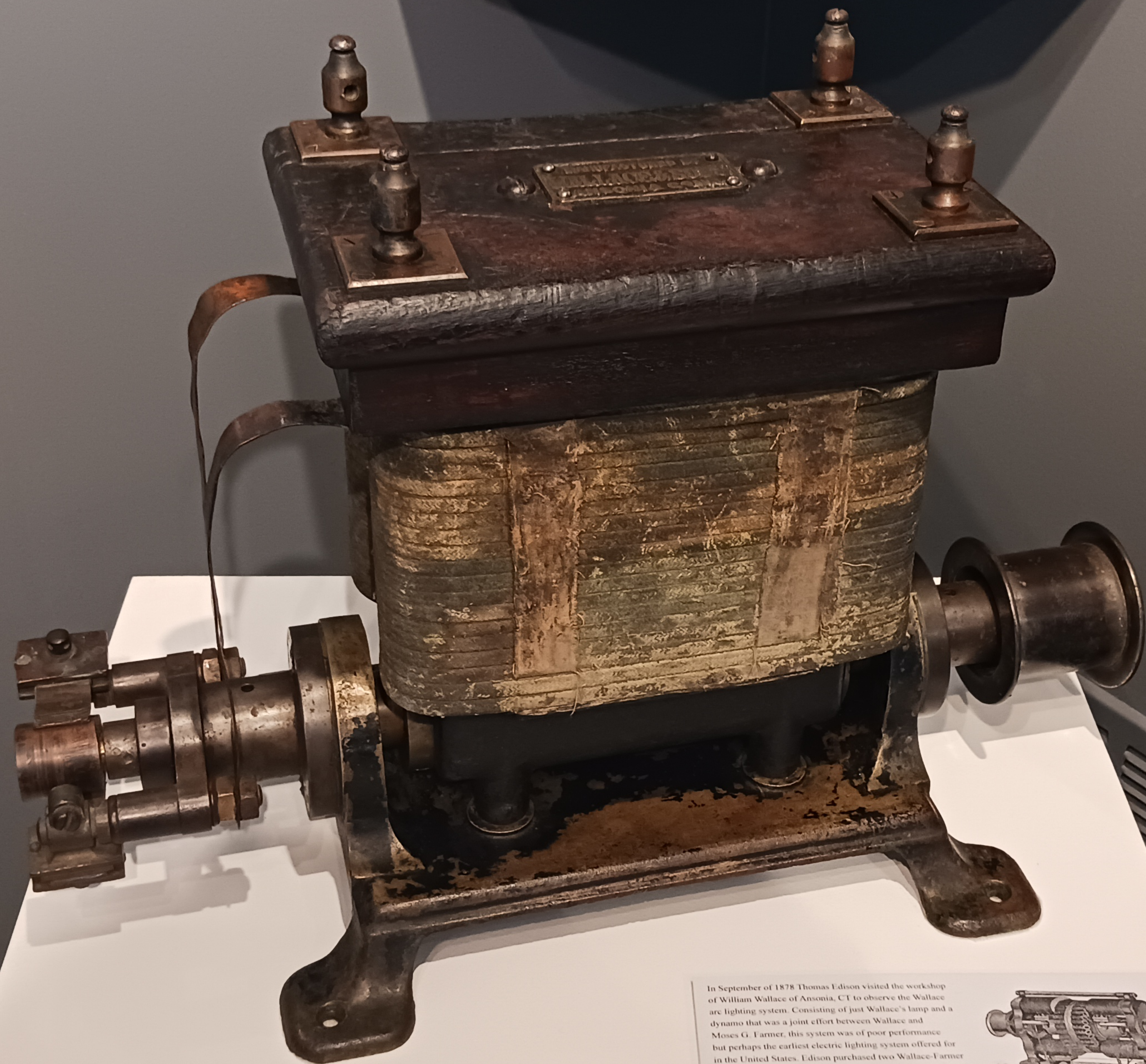


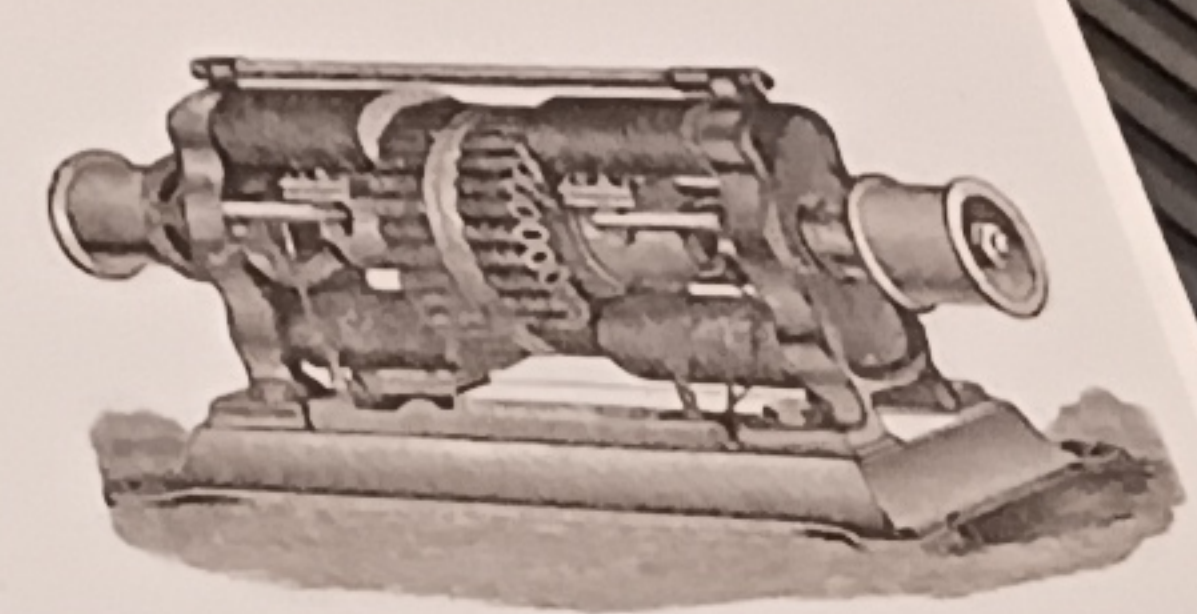


Original cyanotype photo of the Edison team,
front porch, Menlo Park lab.
Provenance: Charles L. Clark collection

William Wallace

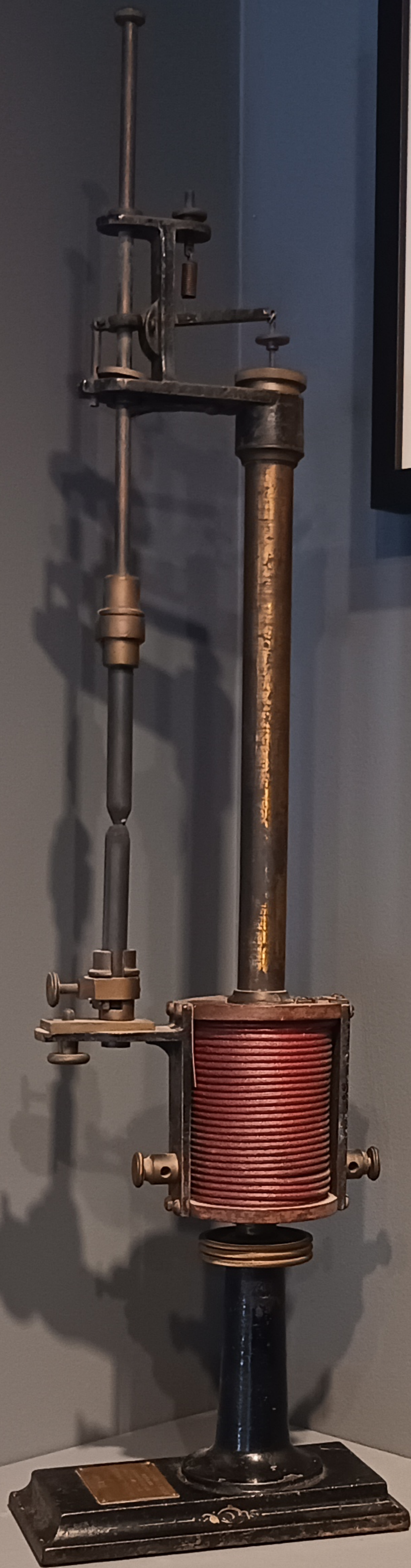
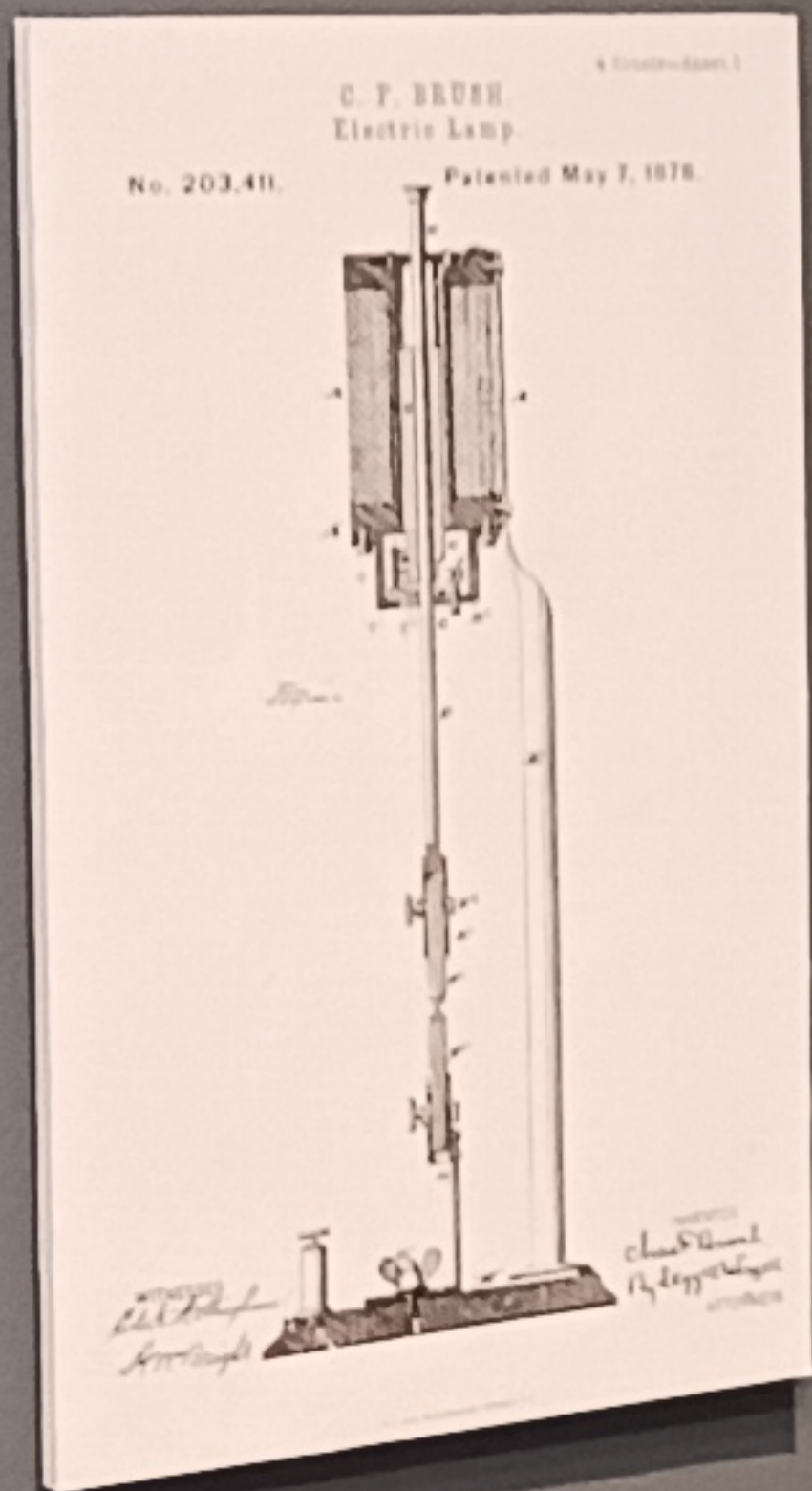


In September of 1878 Thomas Edison visited the workshop of William Wallace of Ansonia, CT to observe the Wallace arc lighting system. Consisting of just Wallace's lamp and a dynamo that was a joint effort between Wallace and Moses G. Farmer, this system was of poor performance but perhaps the earliest electric lighting system offered for in the United States. Edison purchased two Wallace-Farmer dynamos to begin his experiments into perfecting the electric light. In short order Edison would design his own improved dynamo, optimized for incandescent lighting and ultimately the subdivision of electric power.

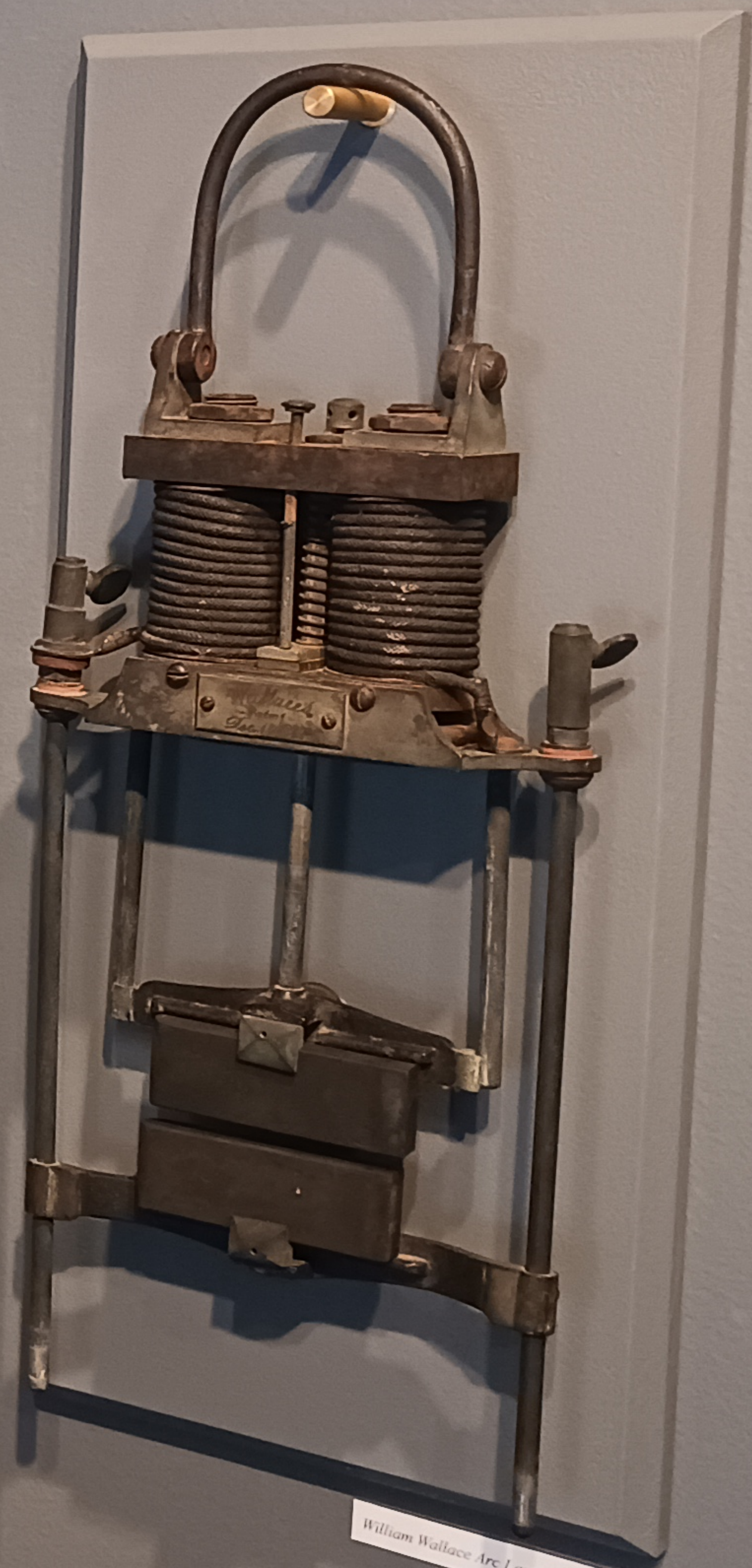
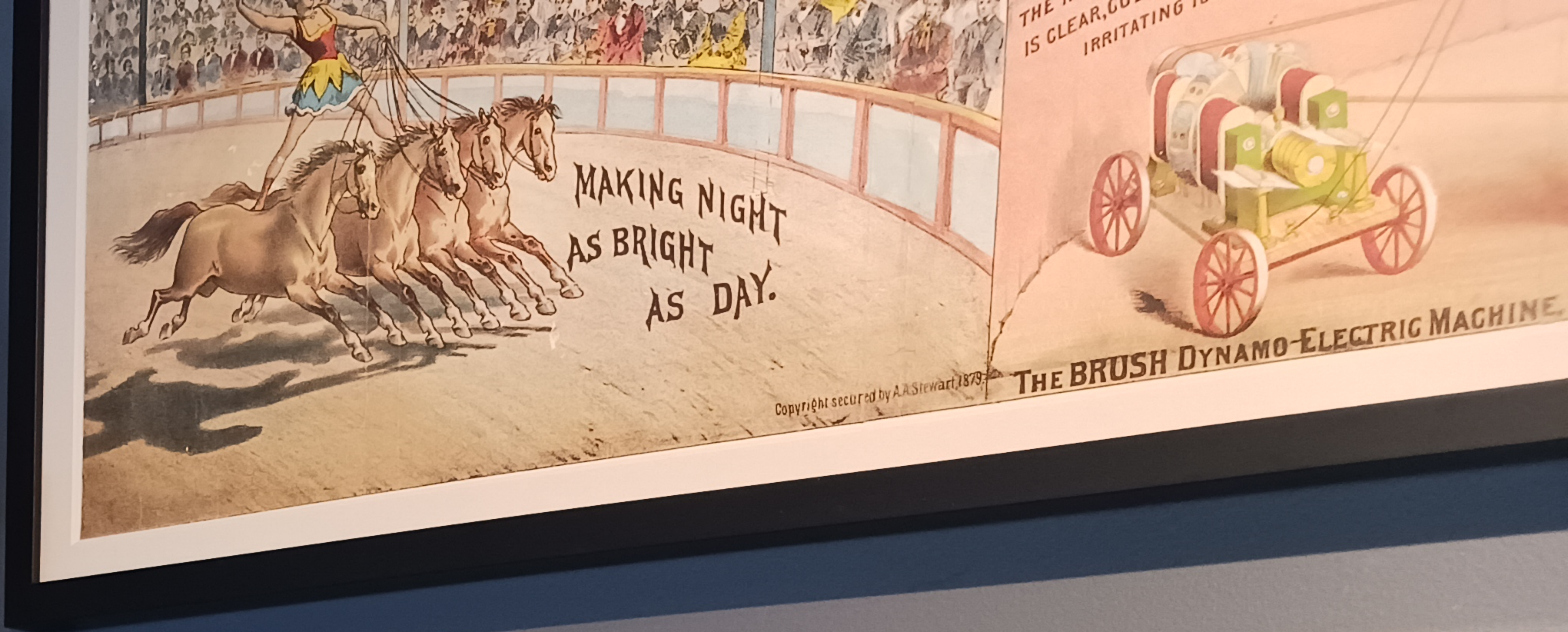


Wallace & Sons Electroplating Dynamo - circa late 1870's

...ph of the Machine Shop & Crew
Tenlo Park, NJ



Brush Arc Lamp - late 1870s-early 1880s



William Wallace Arc Lamp - circa 1878

THE ELECTRIC LIGHT.

MAKING NIGHT
AS BRIGHT
AS DAY.

NO MORE
DANGER FROM
EXPLOSIVE OILS.

CAUSING
NO
EXCESSIVE HEAT
LIKE
GAS OR OIL.

THE INTENSE BRIGHTNESS OF THE ELECTRIC LIGHT
IS CLEAR, COLD AND BEAUTIFUL, AND IN NO WAY
IRRITATING TO THE WEAKEST EYE.

GLOWING WITH THE
PHOSPHORESCENT
EFFULGENCE
OF THE STAR
ALTAIR.

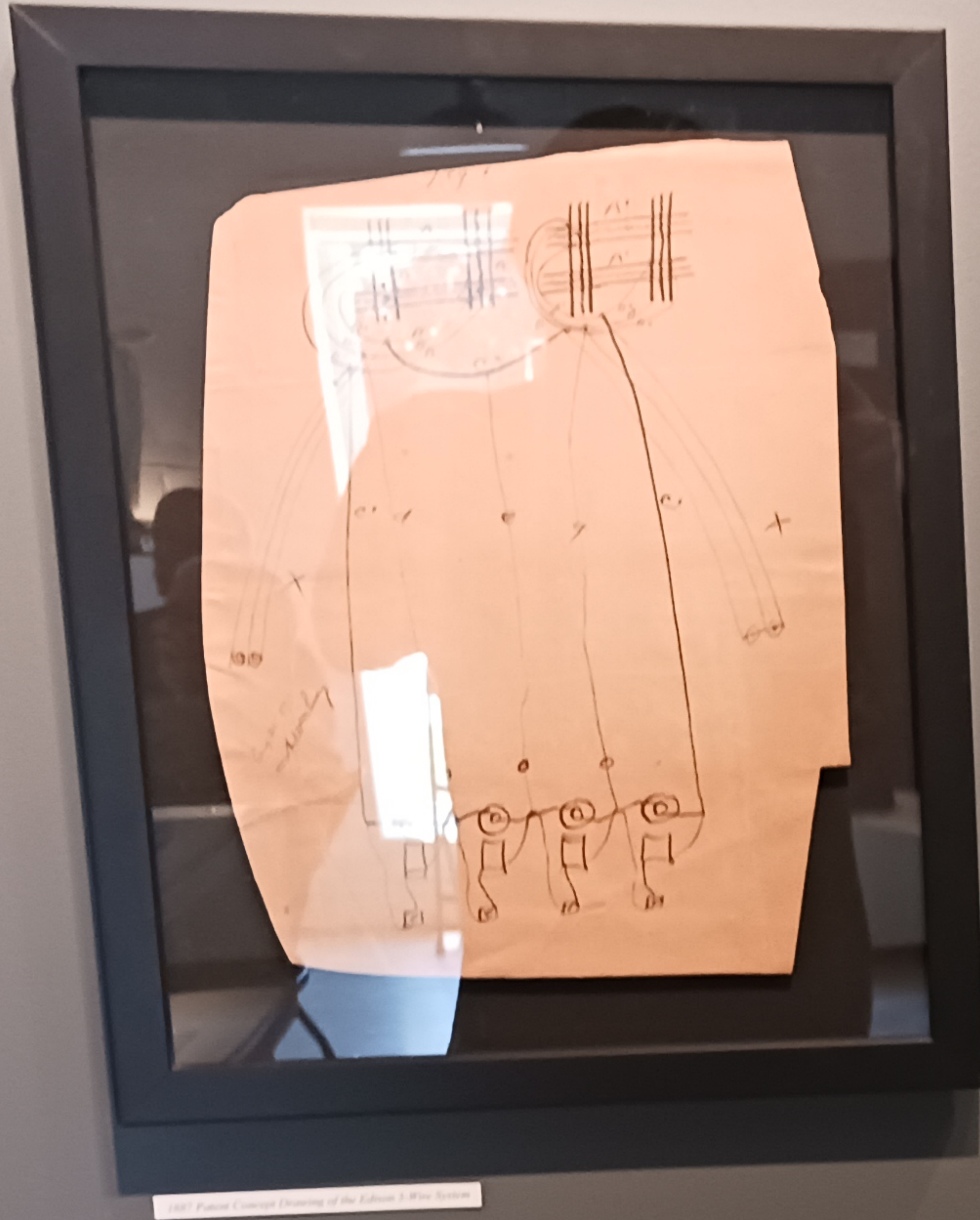
NO MORE DANGER
FROM FIRE OR
FEARS OF PANIC.

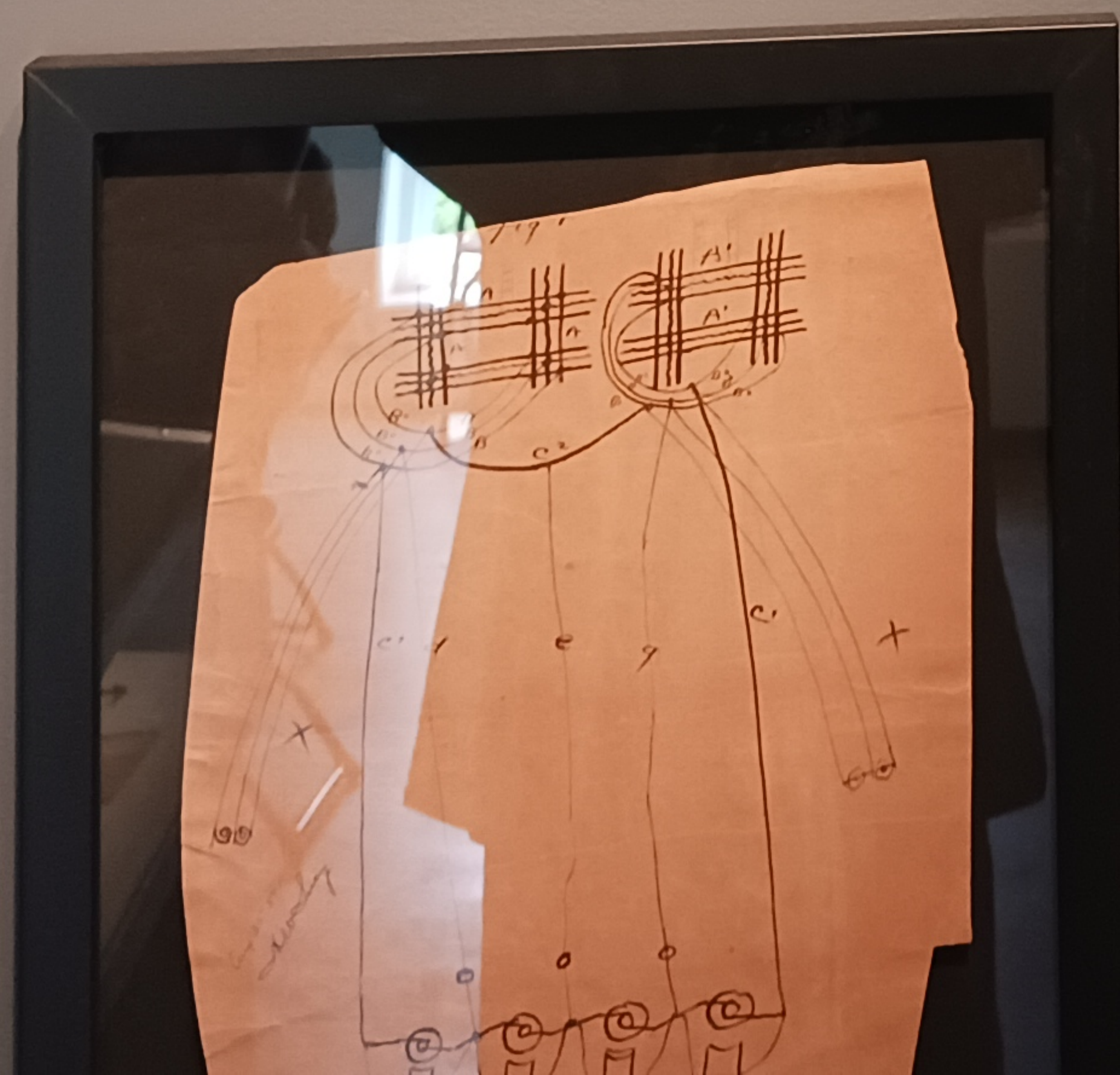
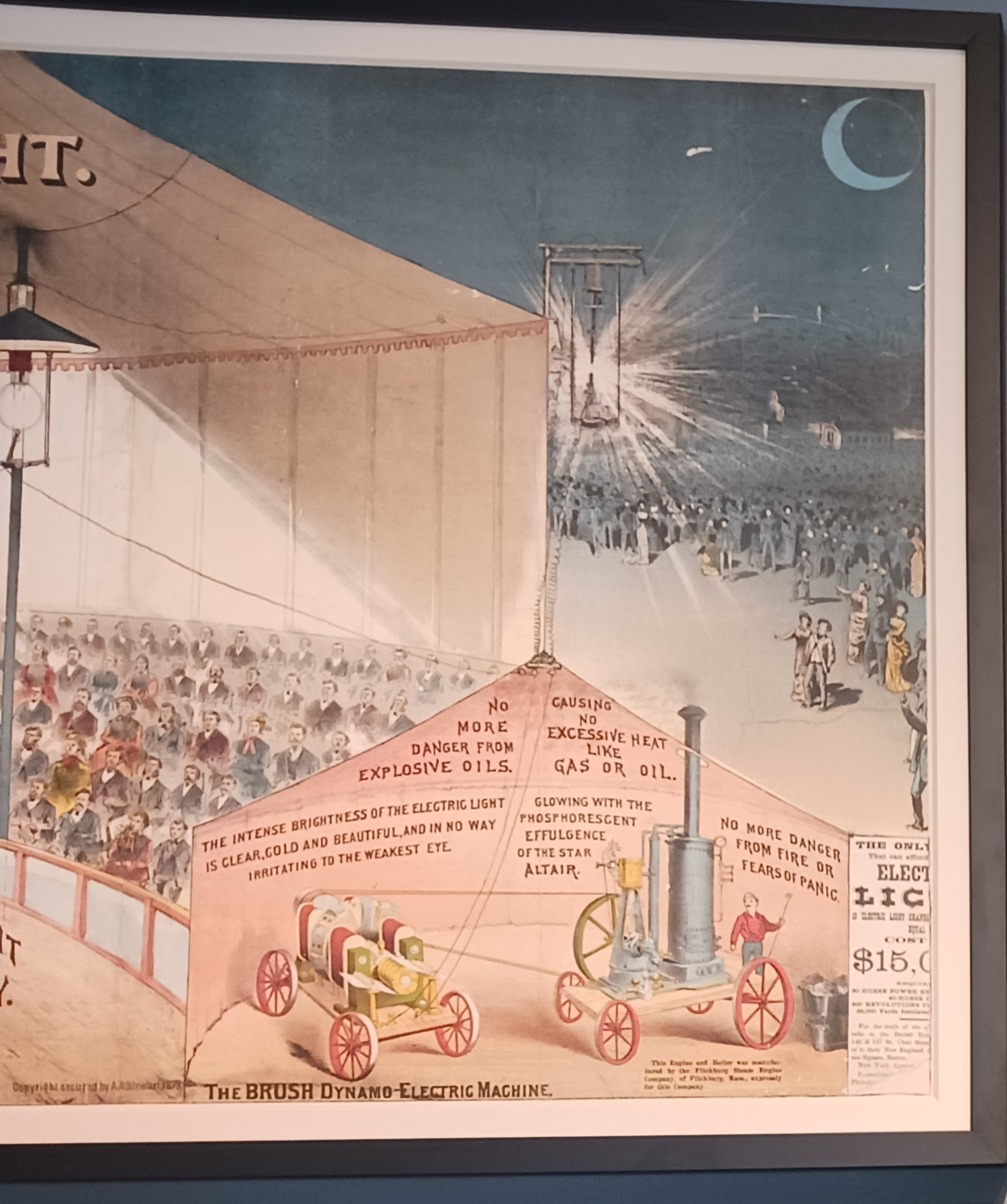
THE ONLY
That can afford
ELECTRIC LIGHT
IS THE ONLY LIGHT
THAT CAN
COST
\$15.00

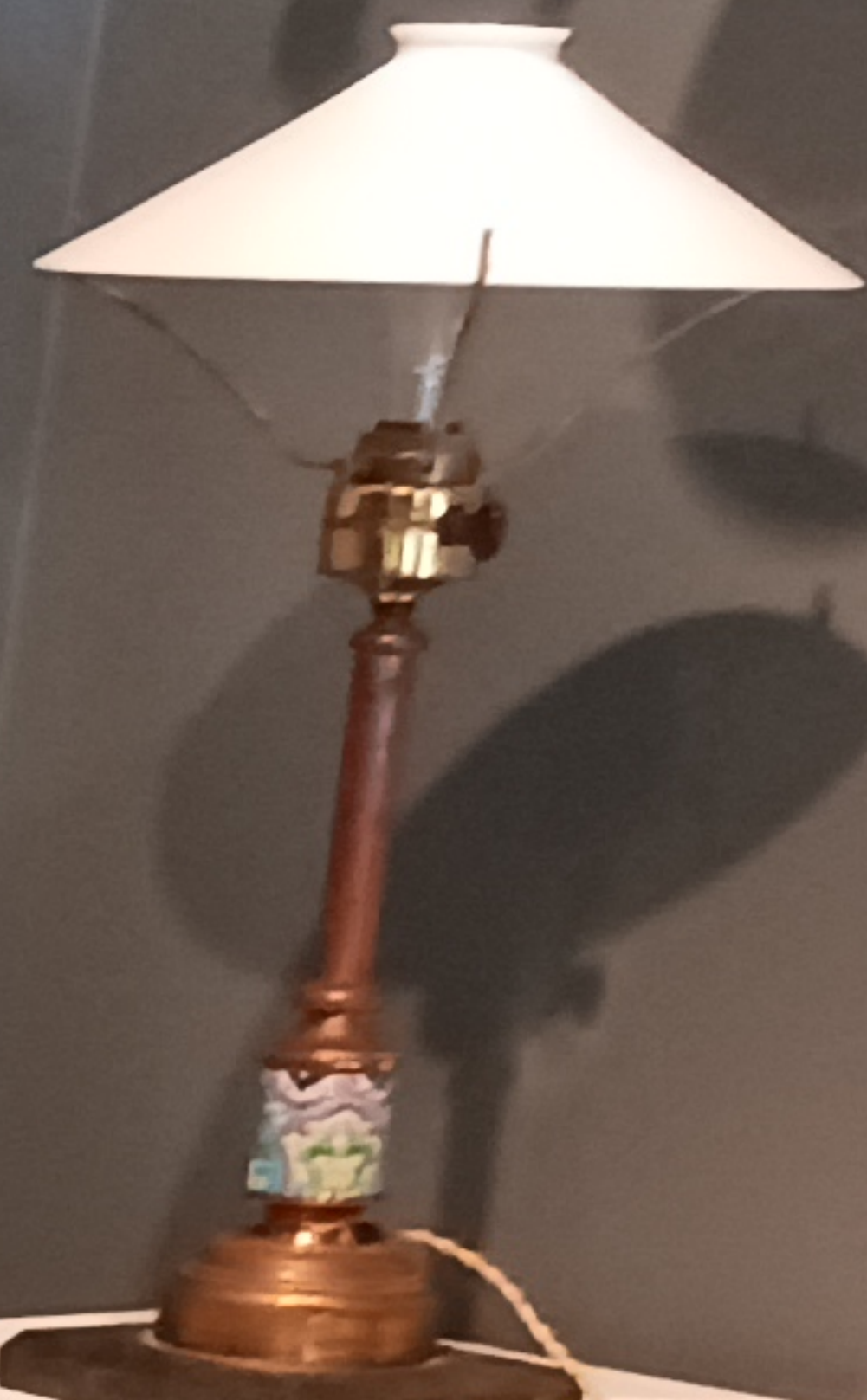
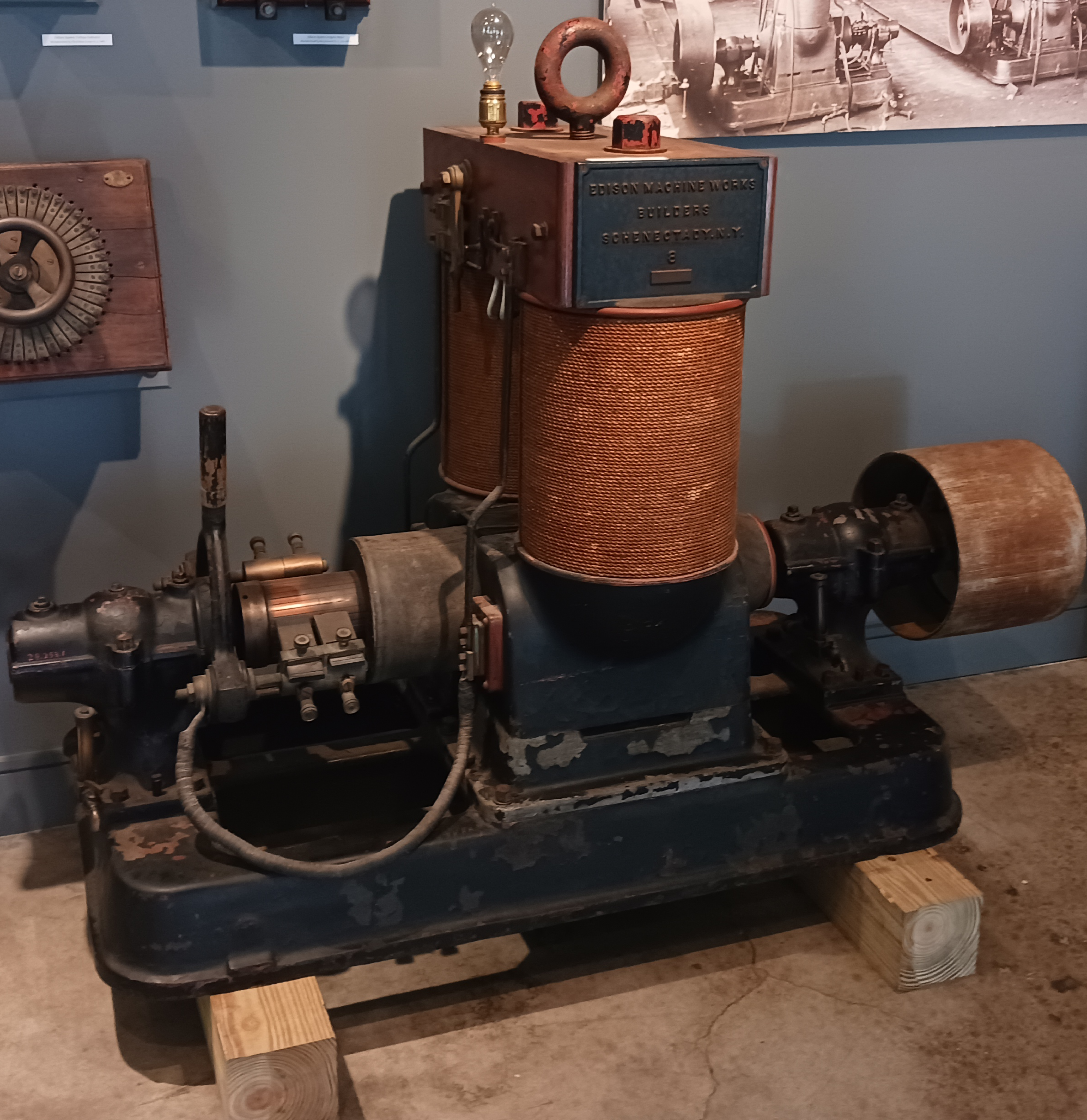
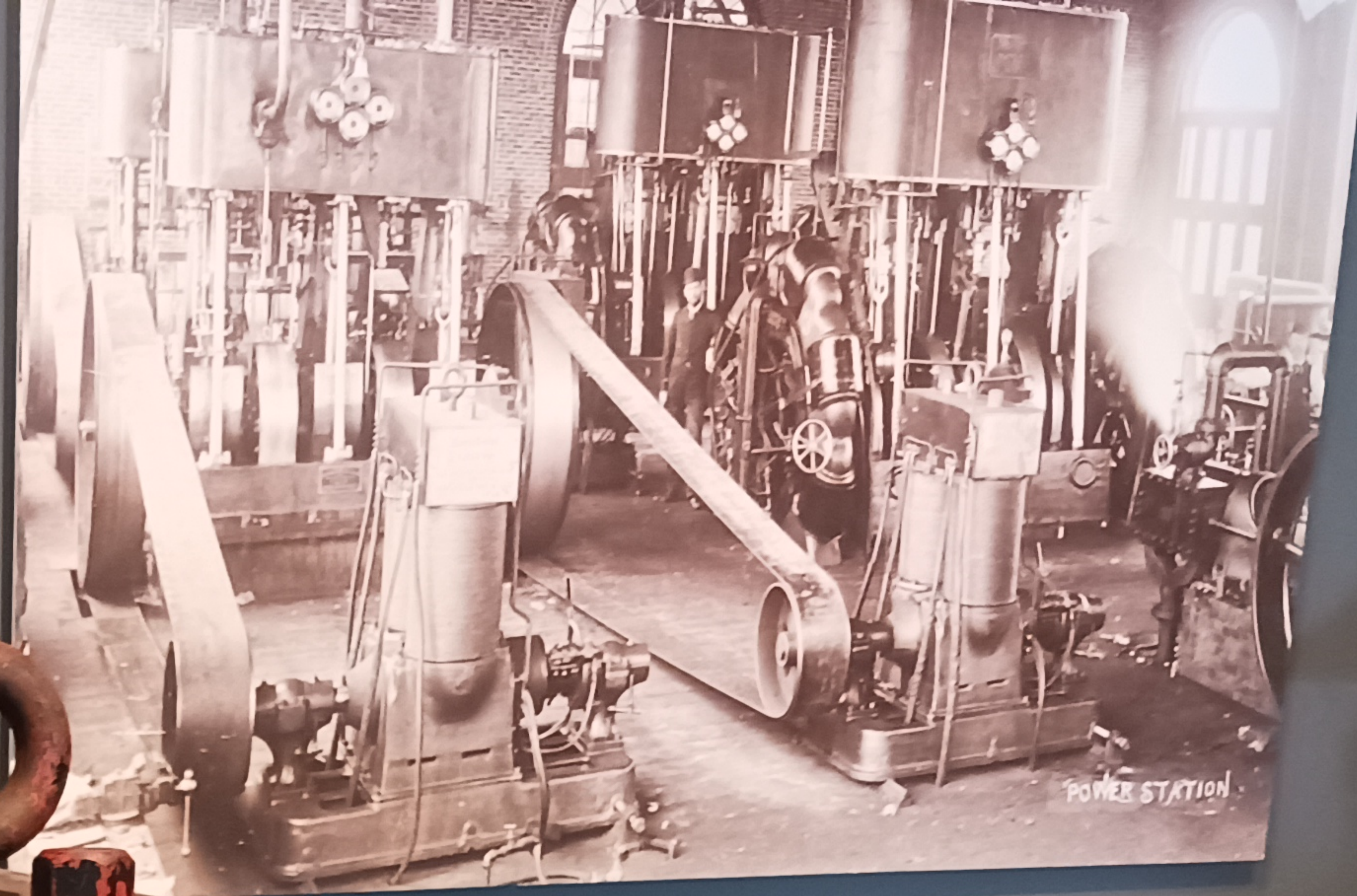
THE BRUSH DYNAMO-ELECTRIC MACHINE.

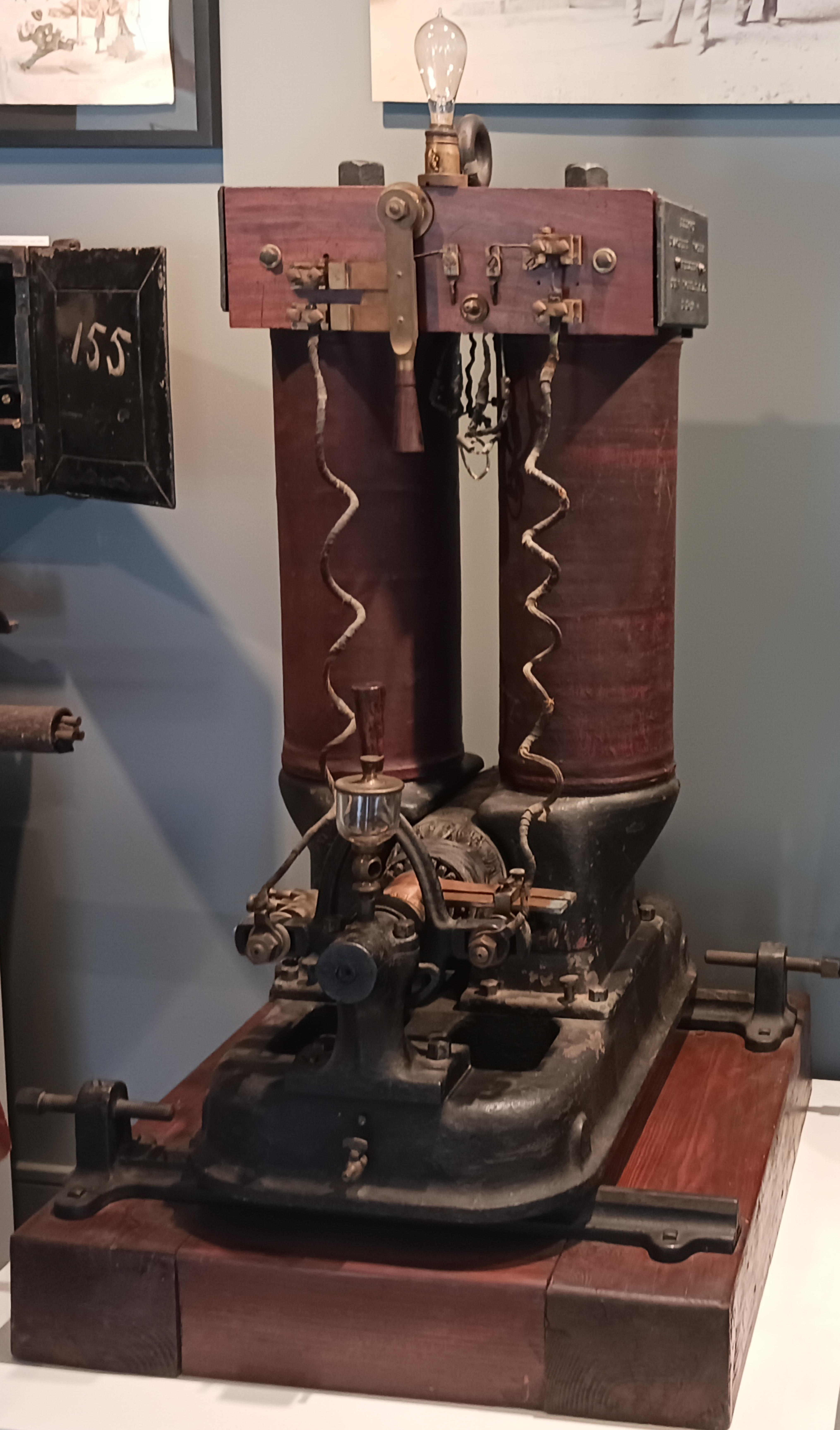
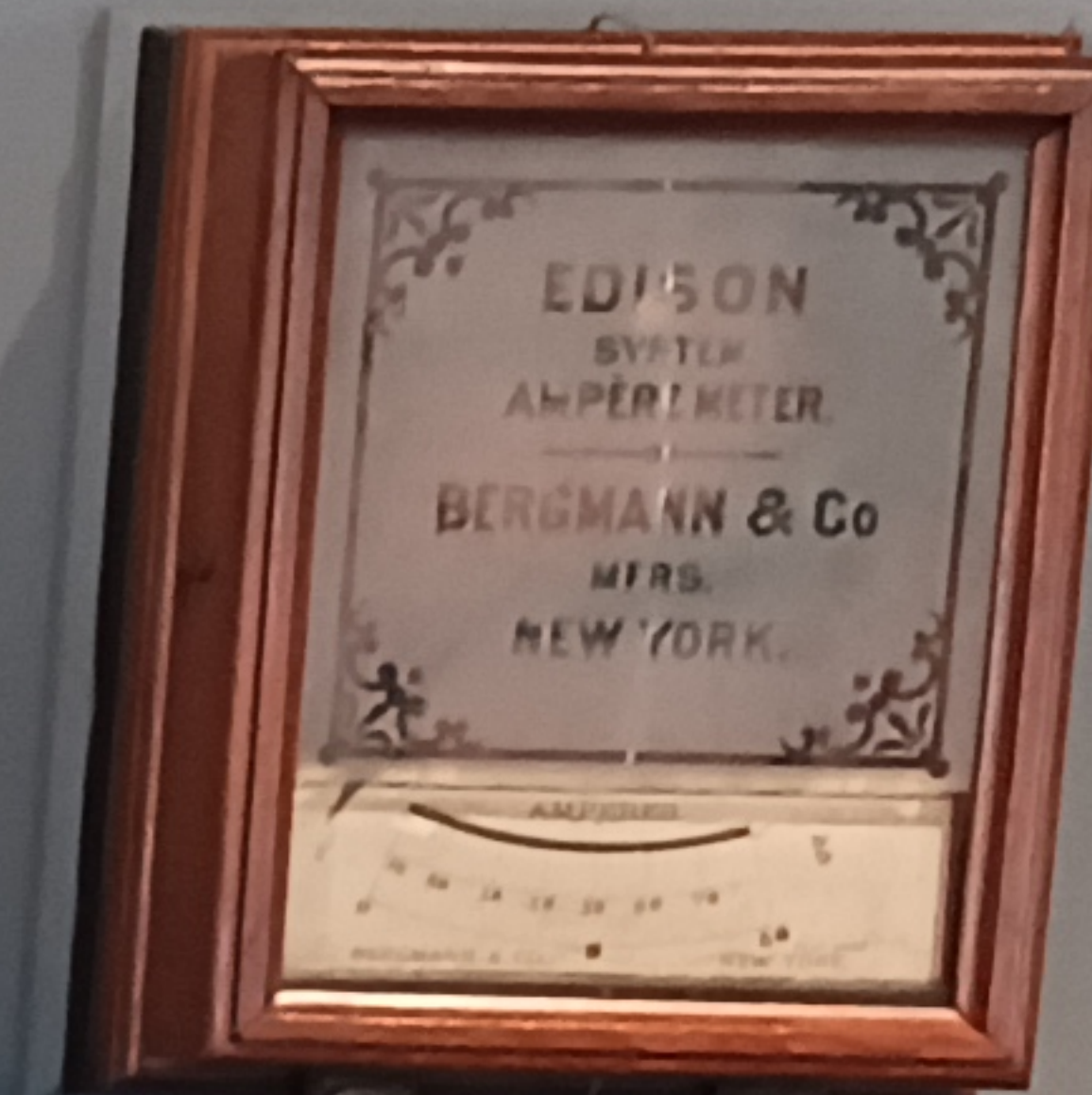
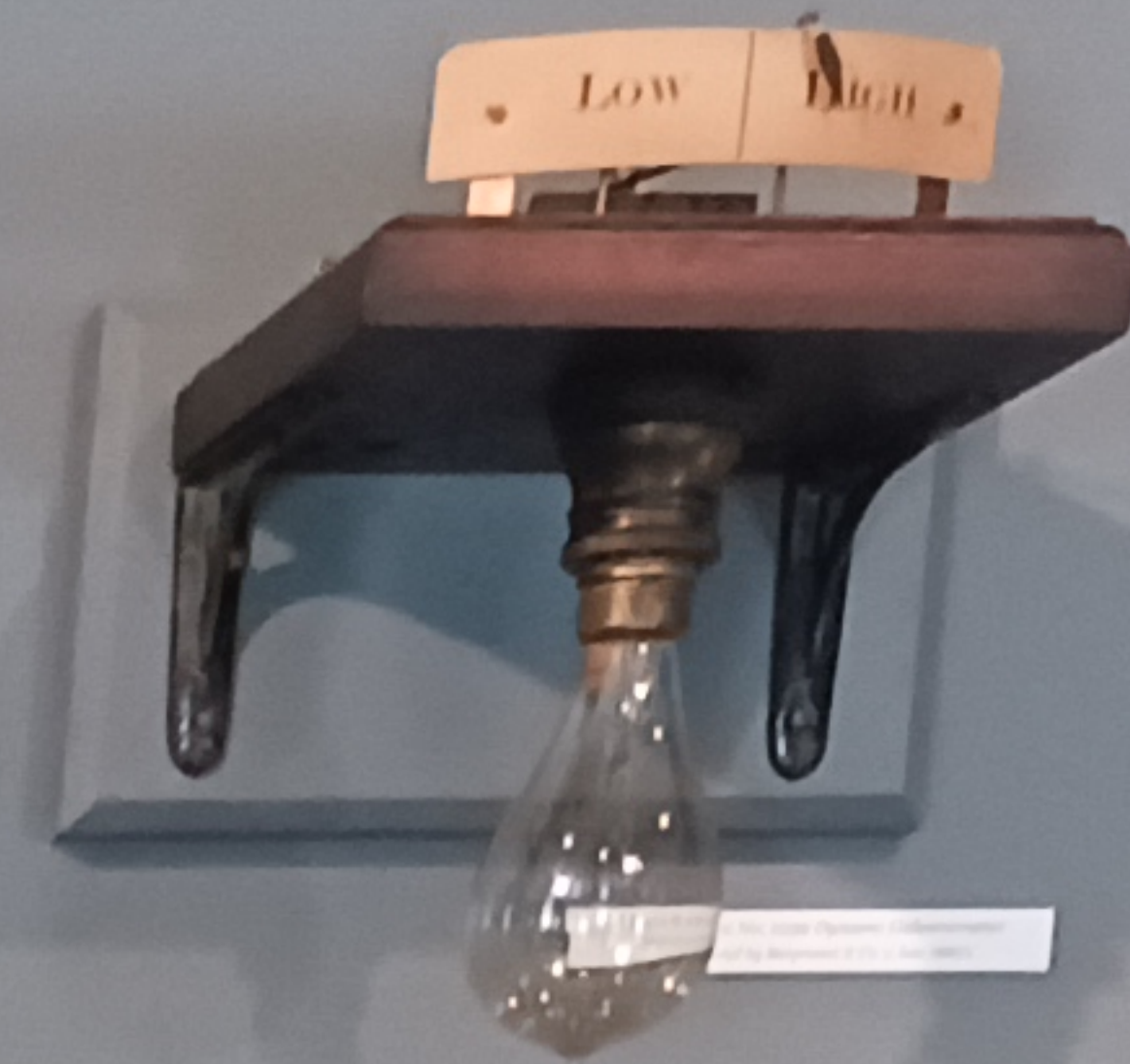
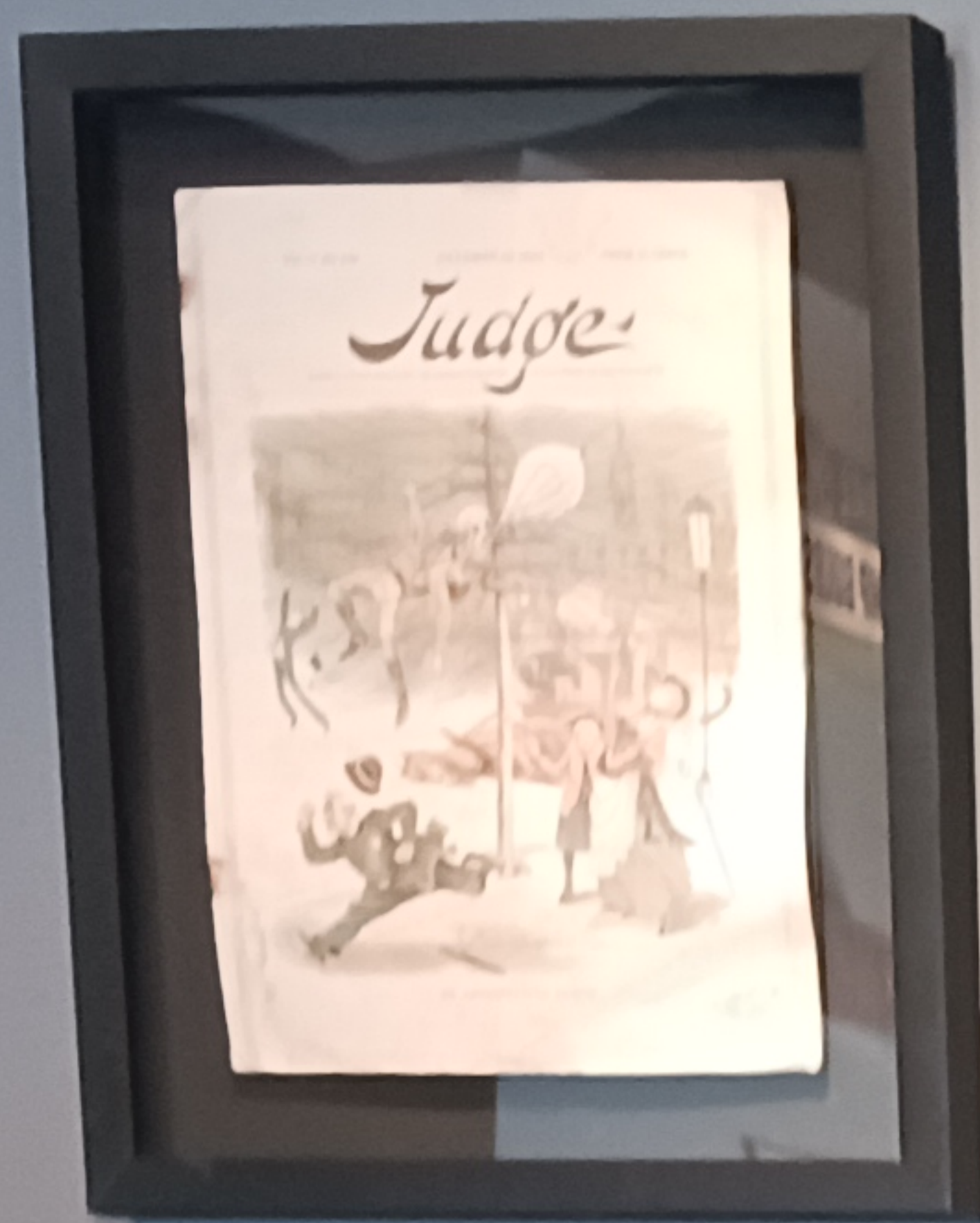
Copyright secured by A. S. Stewart 1878.

This Engine and Boiler was manufactured by the Fitchburg Steam Engine Company, of Fitchburg, Mass., expressly for this Company.











Edison System No. 1030 Dynamometer
Manufactured by Bergmann & Co. c. late 1880s

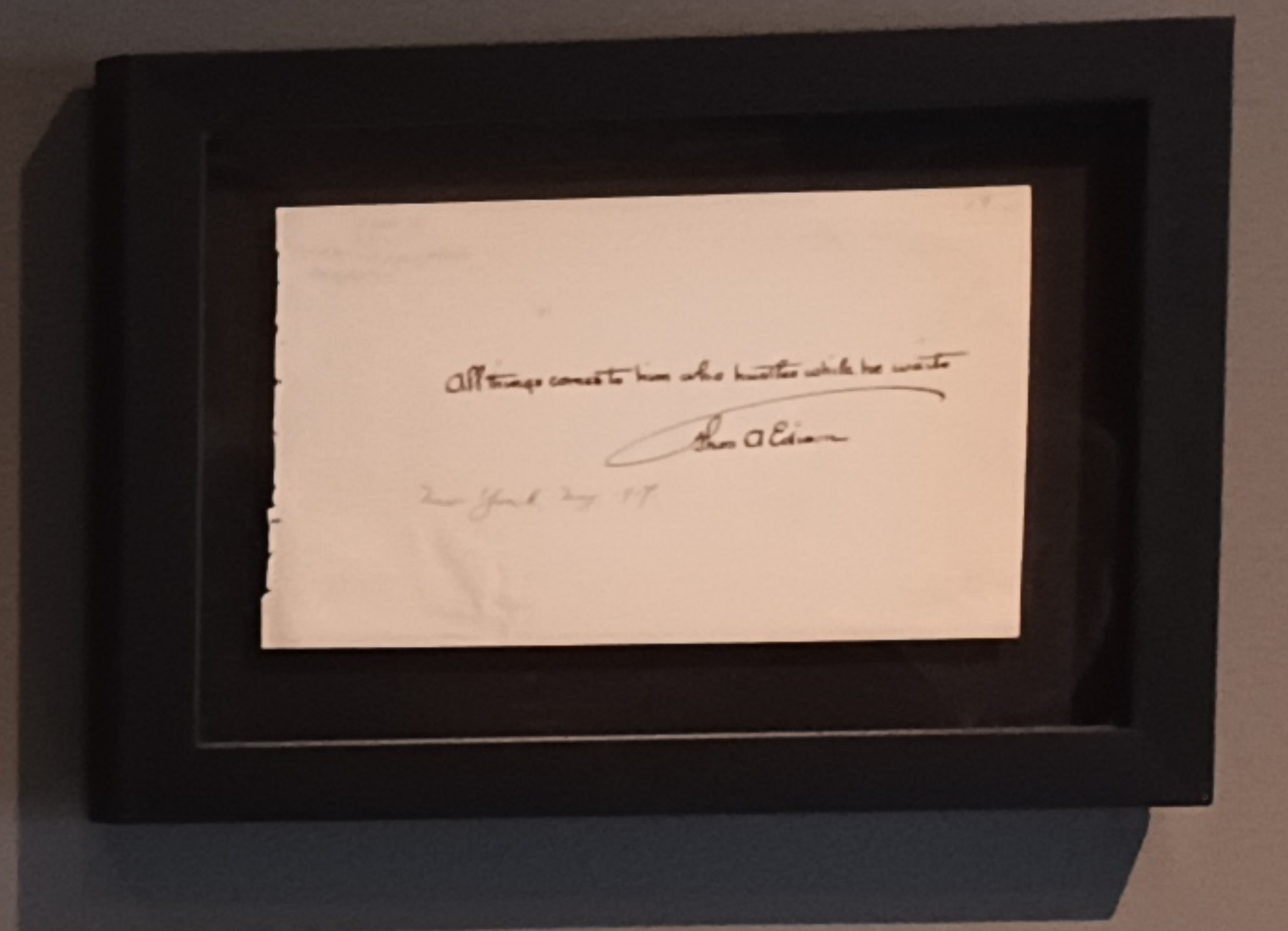


Edison System Voltage Indicator
Manufactured by The Edison Lamp Co. c. 1880



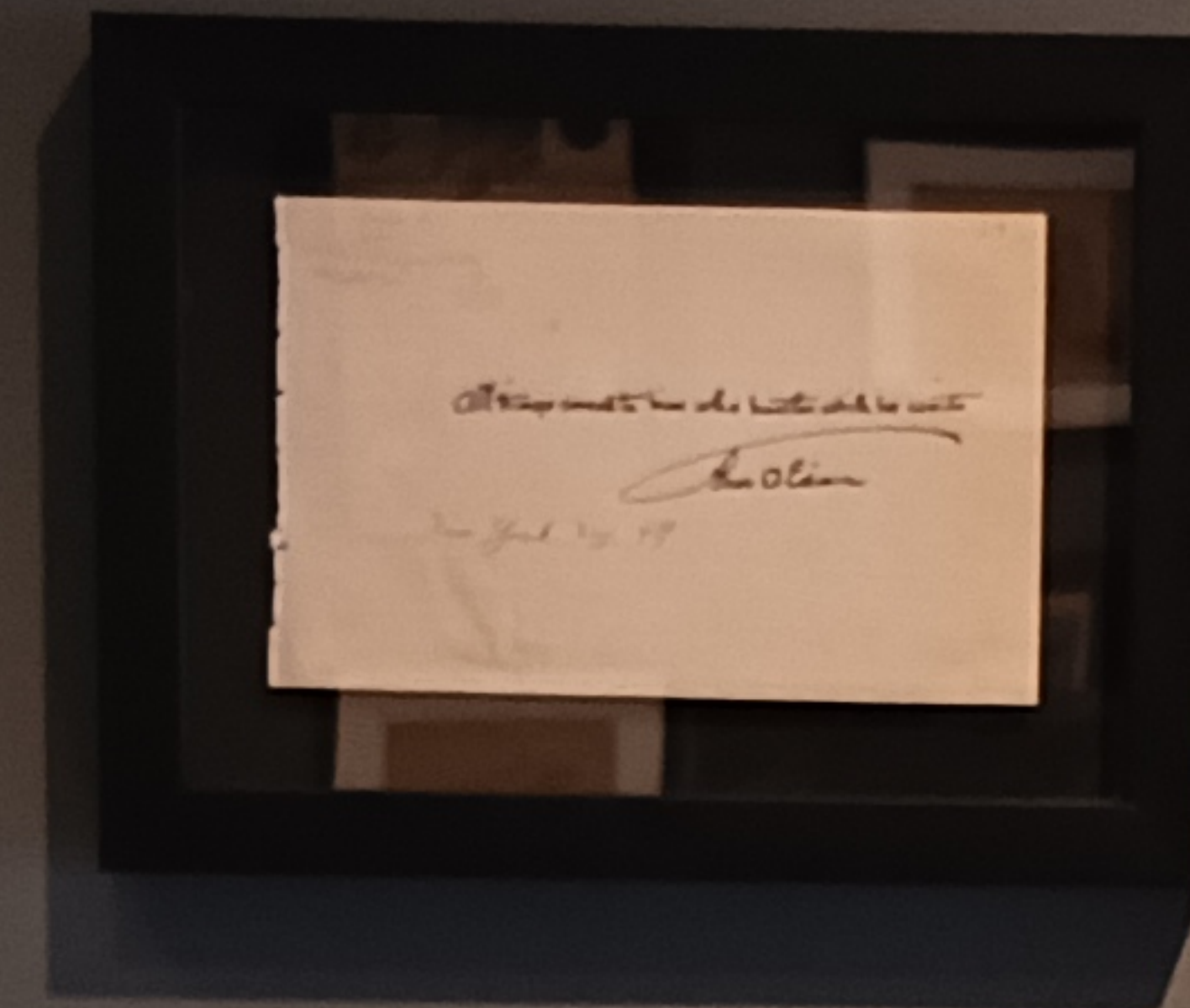
Edison System Ampere Meter
Manufactured by Bergmann & Co. c. late 1880s

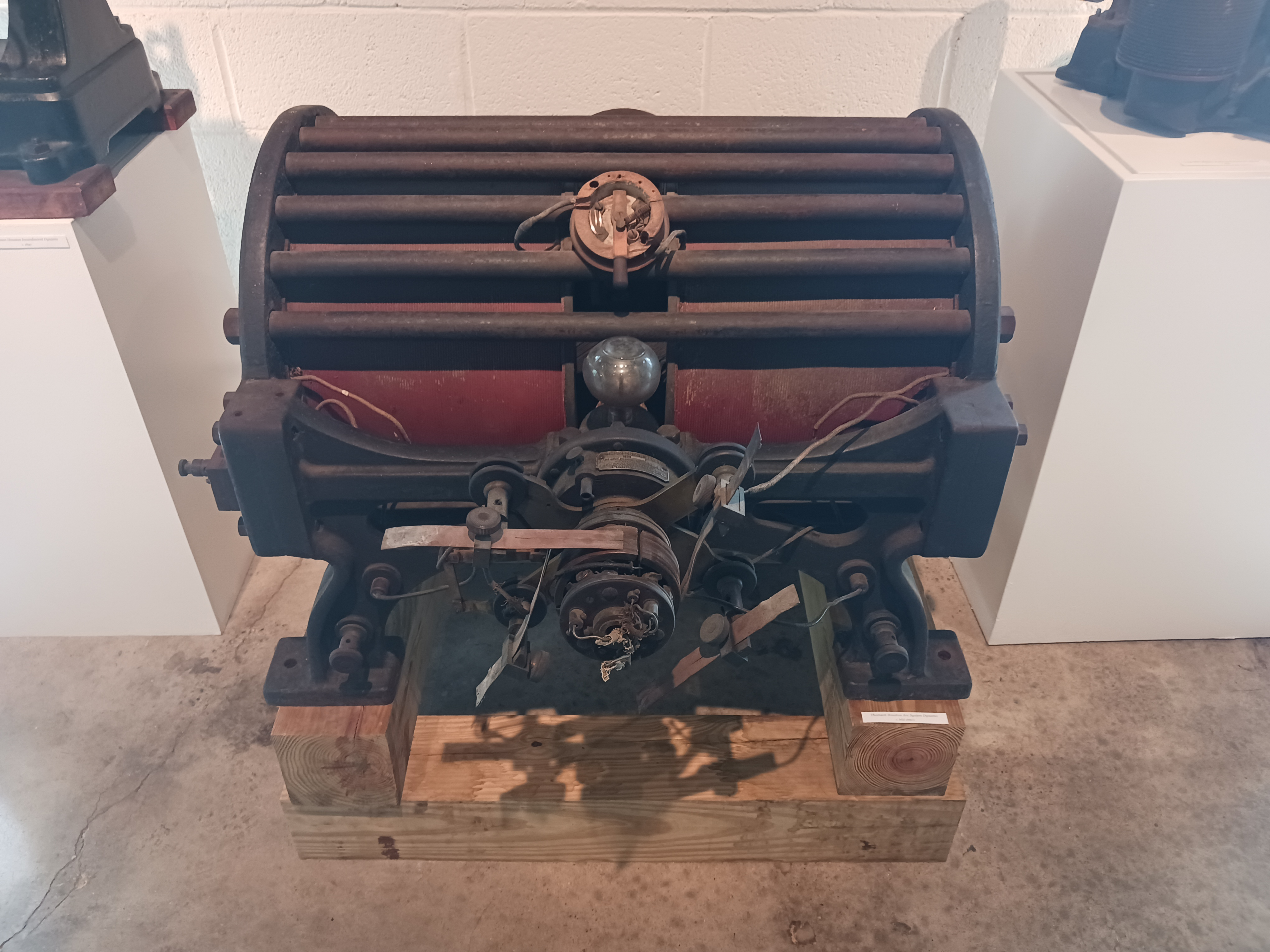
*"All things come to him
who hustles while
he waits"*
-Thomas A. Edison

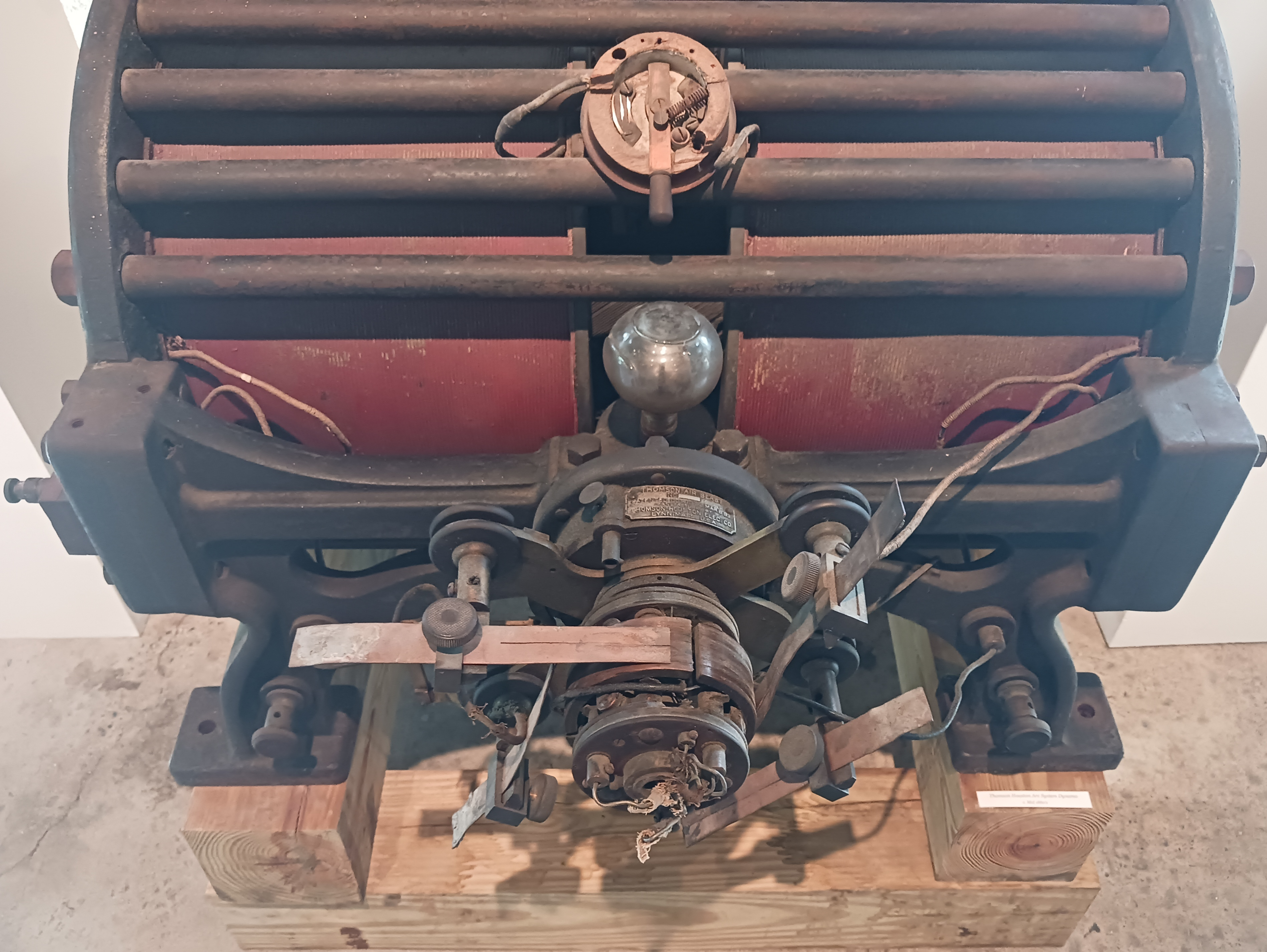


*"All things come to him
who hustles while
he waits"*

-Thomas A. Edison





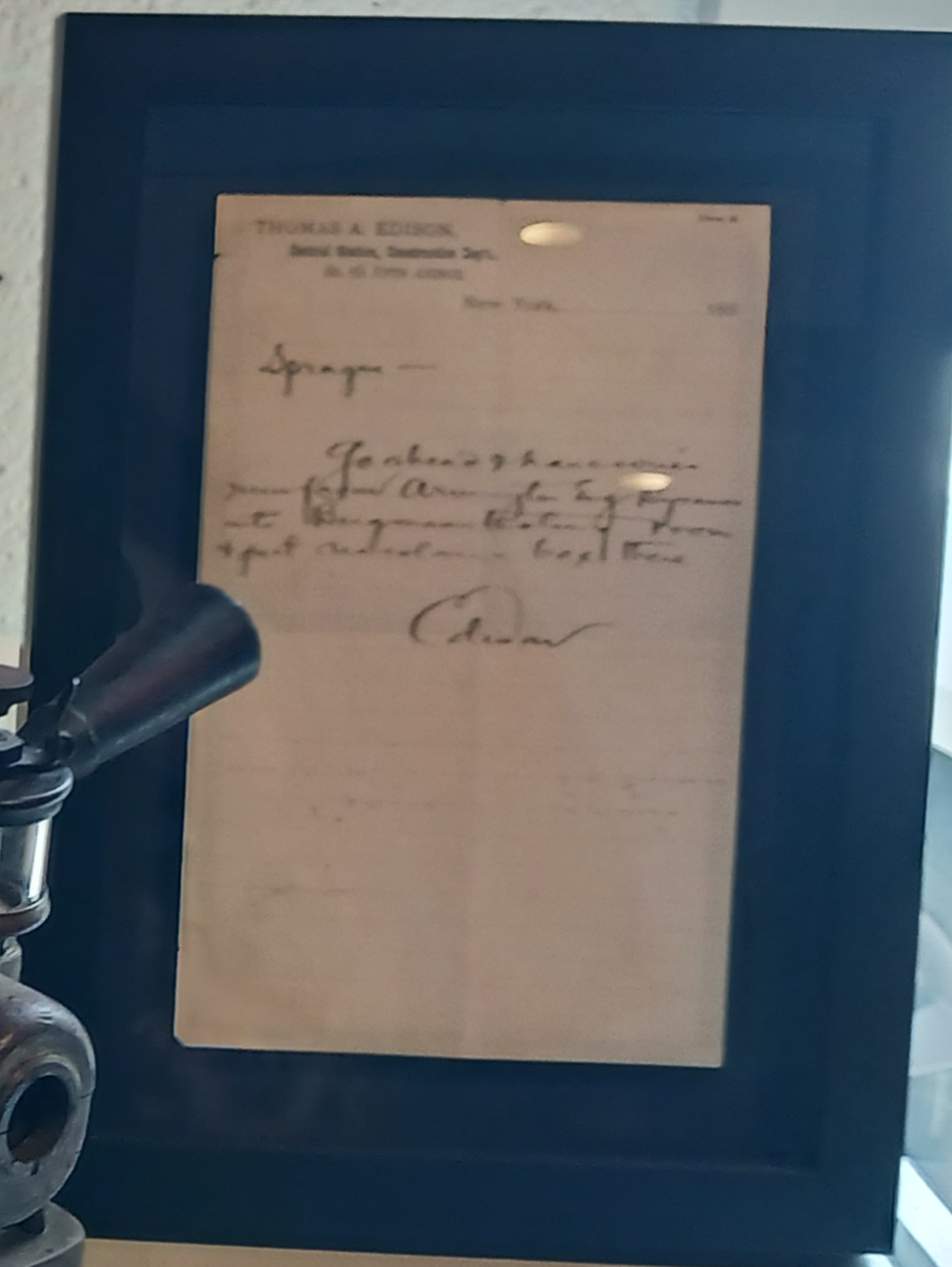




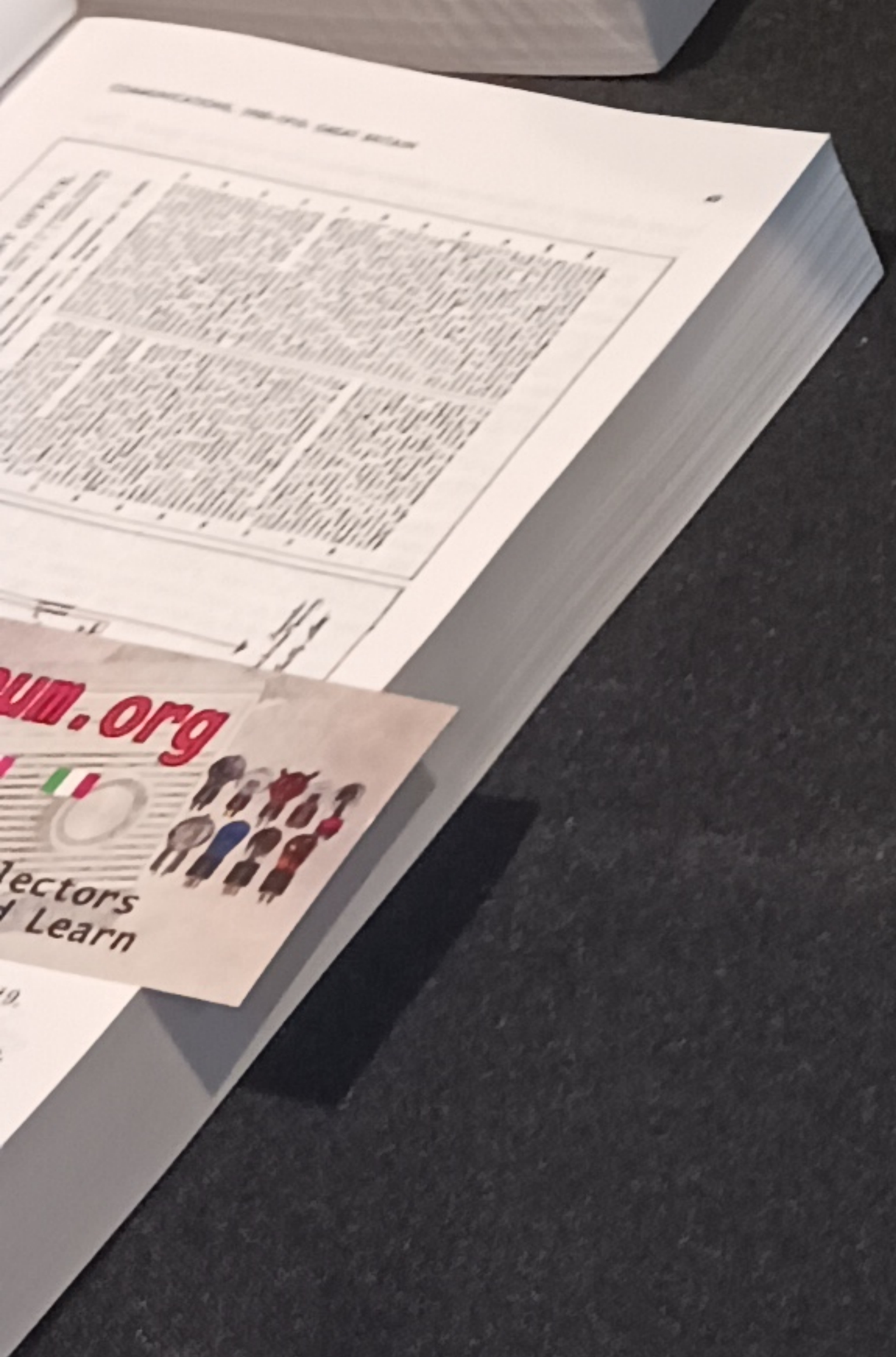
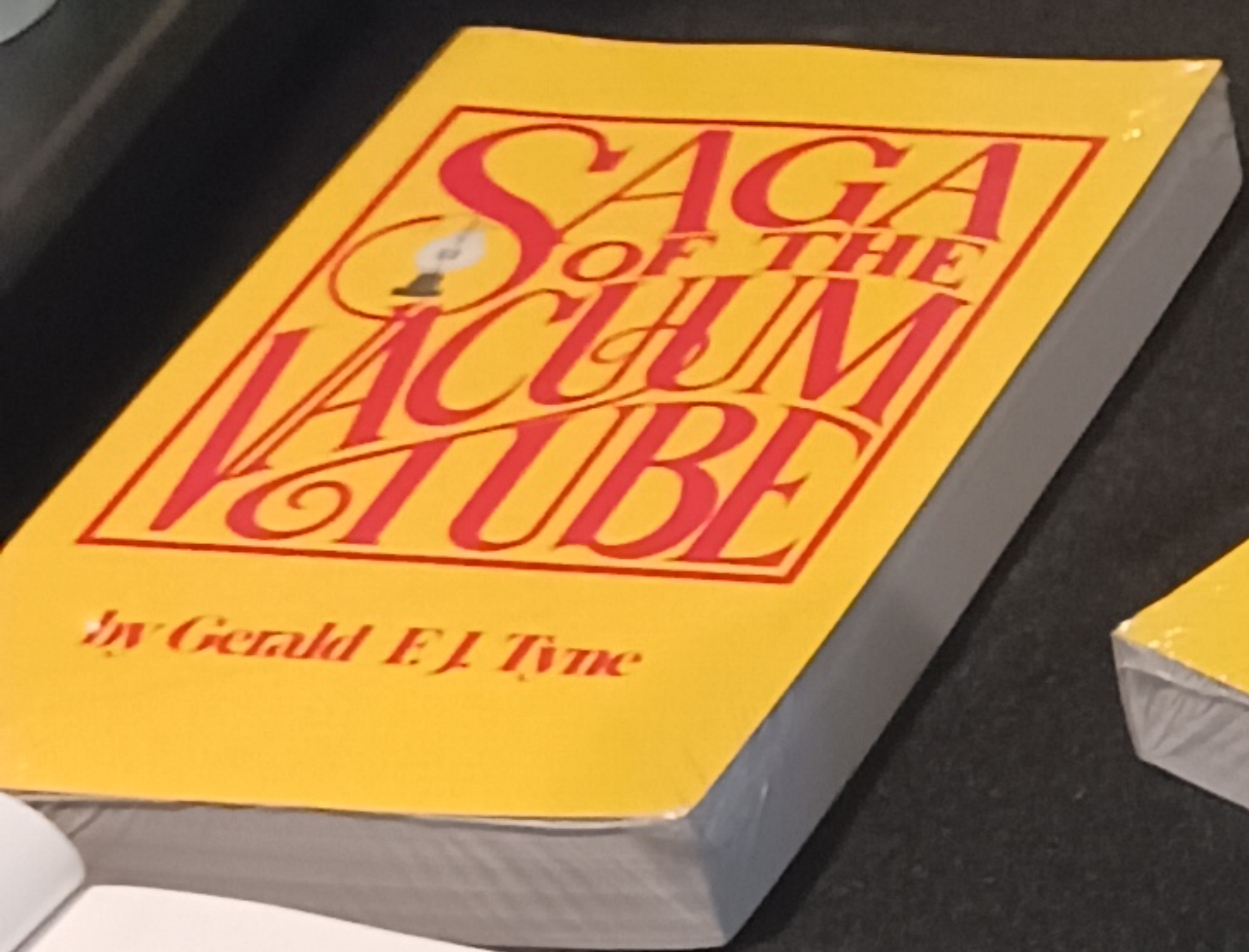
Thomson-Houston Incandescent Dynamo
© 1890



Sprague Electric Railway & Motor Co. Motor
c. 1887

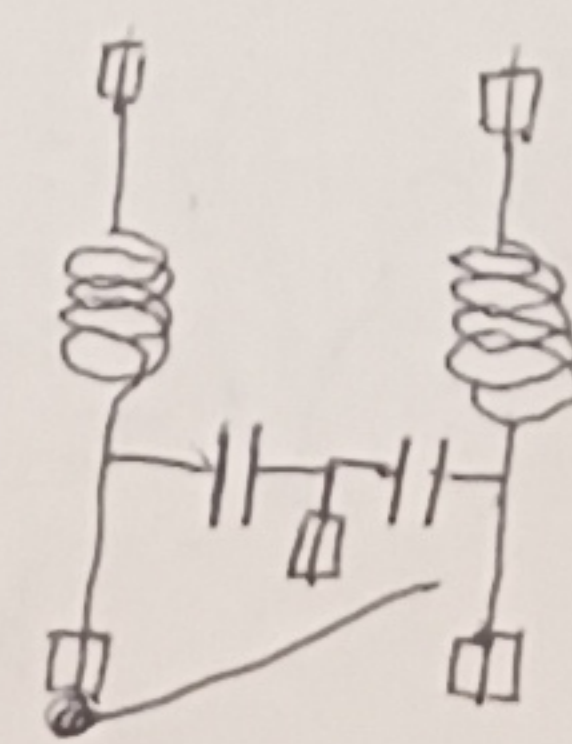


Sprague Electric Railway & Motor Co. Motor
c. 1887

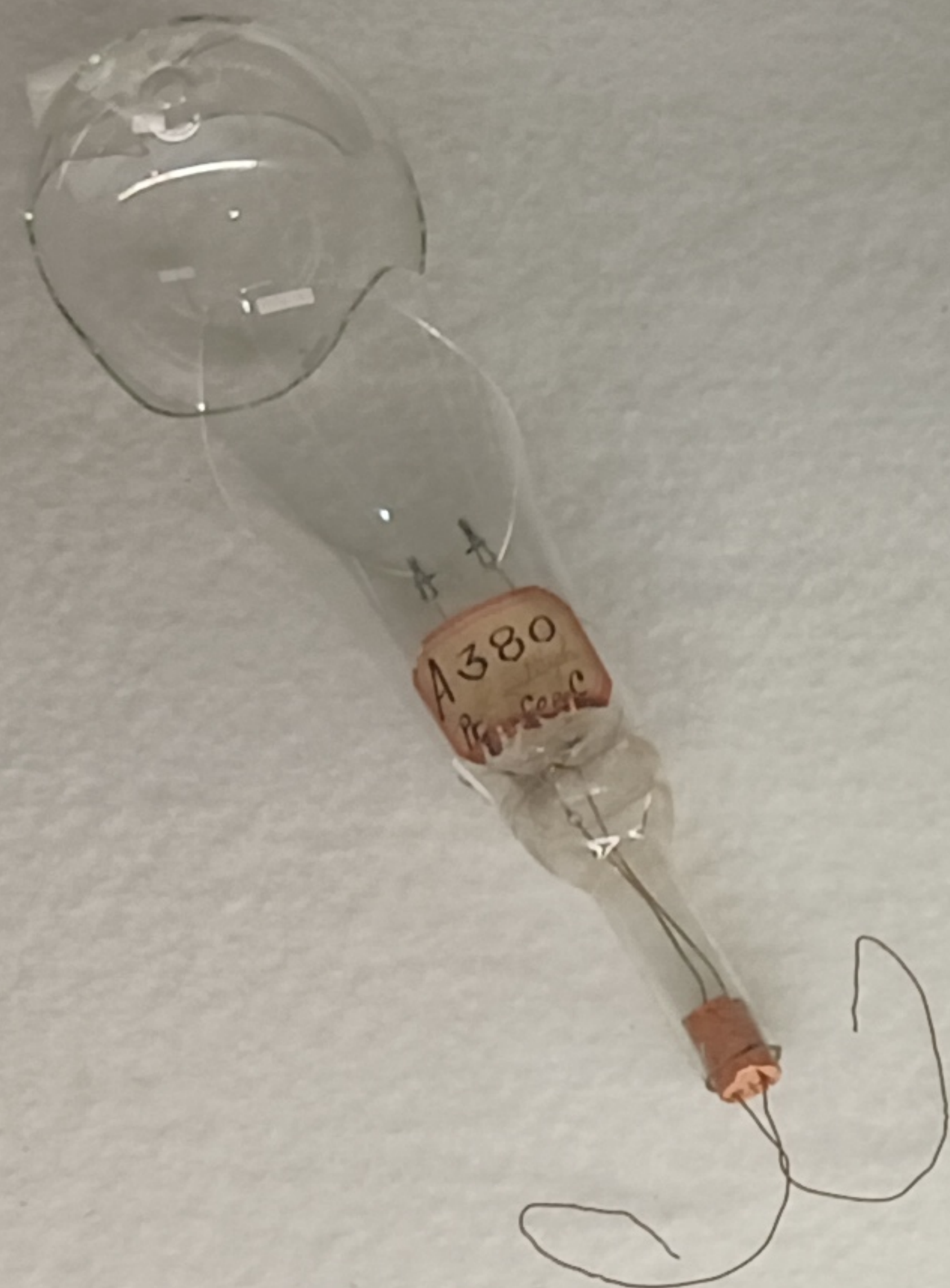


LIGHT UP
YOUR DAY

I'VE HAD THIS FOR A LONG TIME.
I'VE NEVER SEEN ANOTHER LIKE IT.
I DON'T SEE ANYTHING MISSING OR
A WAY TO ADD ANYTHING TO IT.
WHAT IS ITS USE?







Menlo Park Edison experimental lamp
c. mid 1880



Drafting set used by Francis Jehl at Menlo Park
Provenance: Mrs. Francis (Julia) Jehl to Rex Beasley, author of "Edison" 1964



First cable buried below ground at Menlo Park
campus for electric lighting in 1880



Charles L. Clarke
Chief Engineer Edison Electric Light Co.



Edison Wood Base 8cp "B" Lamp
c. Early 1881



Edward H. Johnson
President Edison Electric Light Co.



Edison Plaster Collar Lamp
c. late 1881



Thomas A. Edison
1879



Edison Wood Base 8cp "B" Lamp
c. Early 1881



Edison Wood Base 8cp "B" Lamp
c. Early 1881



Edward H. Johnson
President Edison Electric Light Co.



Thomas A. Edison
1879



Dynamo field coil winding from the first Edison system installation
Steam Ship S.S. Columbia May 1880
Provenance: Charles L. Clarke collection

Piece of No. 10, B.T.C. cotton covered
cable from the field winding
of one of the four Edison incandescent
lamps, installed on the S.S. Columbia,
which sailed from New York City
on May 2nd, 1880, and arrived at
Portland, Oregon, July 26th.
The lamp continued in service until
July, 1895, when it made way for
one of more modern construction.
Chas. L. Clarke
Edison assistant, Manila Park, N.Y.
who inspected the plant before the
Columbia sailed. C.L.C. Aug. 5, 1929.

Report on actual
and estimated cost
of Central Station
257 Pearl St. N.Y.C.

Original expense report for the construction of the Pearl Street Station
New York, NY, first central station for incandescent lighting
in the United States.
Provenance: Charles L. Clarke collection



Edison Effect Lamps - The precursor to the vacuum tube
Provenance: William H. Preese, Ray Tye, The Jim & Felicia Krenzer Collection

Mr. W. H. Preese. Behavior of Glow-Lamps [Mar. 26, 1885.] when raised to High Incandescence.

Experiment 4.—Copper Centre (single).

Volts	Amperes	Observed pressure (mm. Hg.)	Calculated pressure (mm. Hg.)	Remarks
80	0.27	140.4	0.046	
90	0.27	134.3	0.12	25,000
100	0.27	128.6	0.30	5,000
110	0.27	122.2	0.75	1,000
120	0.27	115.8	1.75	250
130	0.27	109.4	3.90	60
140	0.27	103.0	8.60	15
150	0.27	96.6	19.0	5
160	0.27	90.2	42.0	1
170	0.27	83.8	95.0	0.2
180	0.27	77.4	210.0	0.05
190	0.27	71.0	470.0	0.01
200	0.27	64.6	1,040.0	0.005
210	0.27	58.2	2,320.0	0.001

7. Lamp No. 9 was made with a double platinum plate, thus—

Fig. 2

The following experiment shows that no perceptible difference was observable—

Experiment 5.—No. 9 Lamp (double platinum).

Volts	Amperes	Observed pressure (mm. Hg.)	Calculated pressure (mm. Hg.)	Remarks
80	0.27	140.4	0.046	
90	0.27	134.3	0.12	25,000
100	0.27	128.6	0.30	5,000
110	0.27	122.2	0.75	1,000
120	0.27	115.8	1.75	250
130	0.27	109.4	3.90	60
140	0.27	103.0	8.60	15
150	0.27	96.6	19.0	5
160	0.27	90.2	42.0	1
170	0.27	83.8	95.0	0.2
180	0.27	77.4	210.0	0.05
190	0.27	71.0	470.0	0.01
200	0.27	64.6	1,040.0	0.005
210	0.27	58.2	2,320.0	0.001

8. Although the maximum effect was produced by Mr. Edison when the plate was fixed between the limbs, he obtained a current when it was fixed in any part of the rounded space. If the effect was due primarily to the Crookes effect, or to the projection of molecules from the carbon filament on to the metal plate, once this bombardment takes place in right lines, we ought to have obtained effects when these lines were projected on the plate, but no effect when they could not strike the plate. Several lamps were made, which are shown in the following sketches.

9. The metal plate was taken from between the limbs of the filament, and placed at the end of a tube which had a portion of the filament exposed to the plate.

Fig. 3

Original photograph of the Sarah Jordan Boarding House,
Menlo Park, NJ

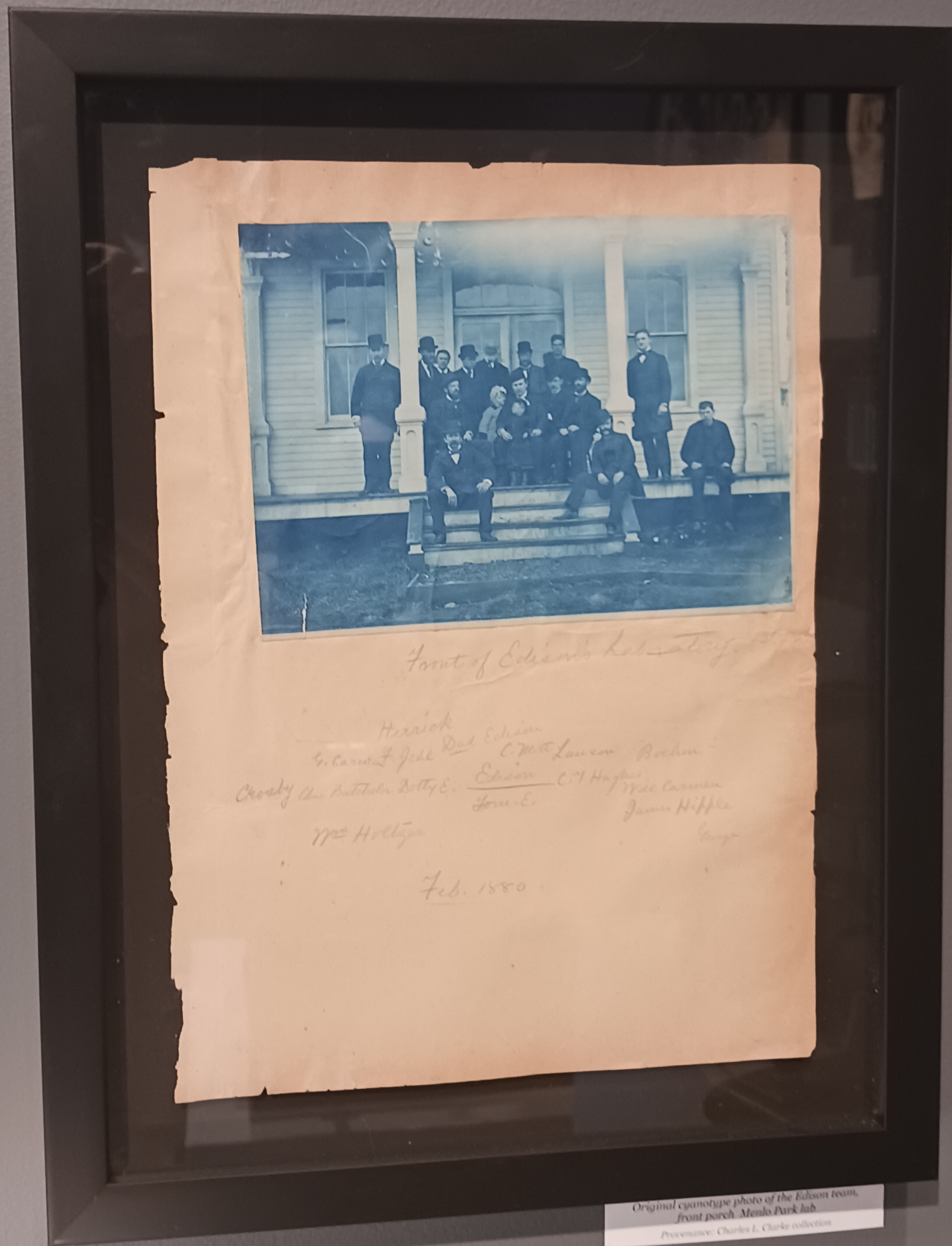


C. T. Hughes S. D. Mott
George Hill Francis Jehl
Interior of Edison's Laboratory
Menlo Park
Feb. 1880 N.Y.

Original cyanotype photo of the second floor of the Menlo Park lab
Provenance: Charles E. Clarke collection



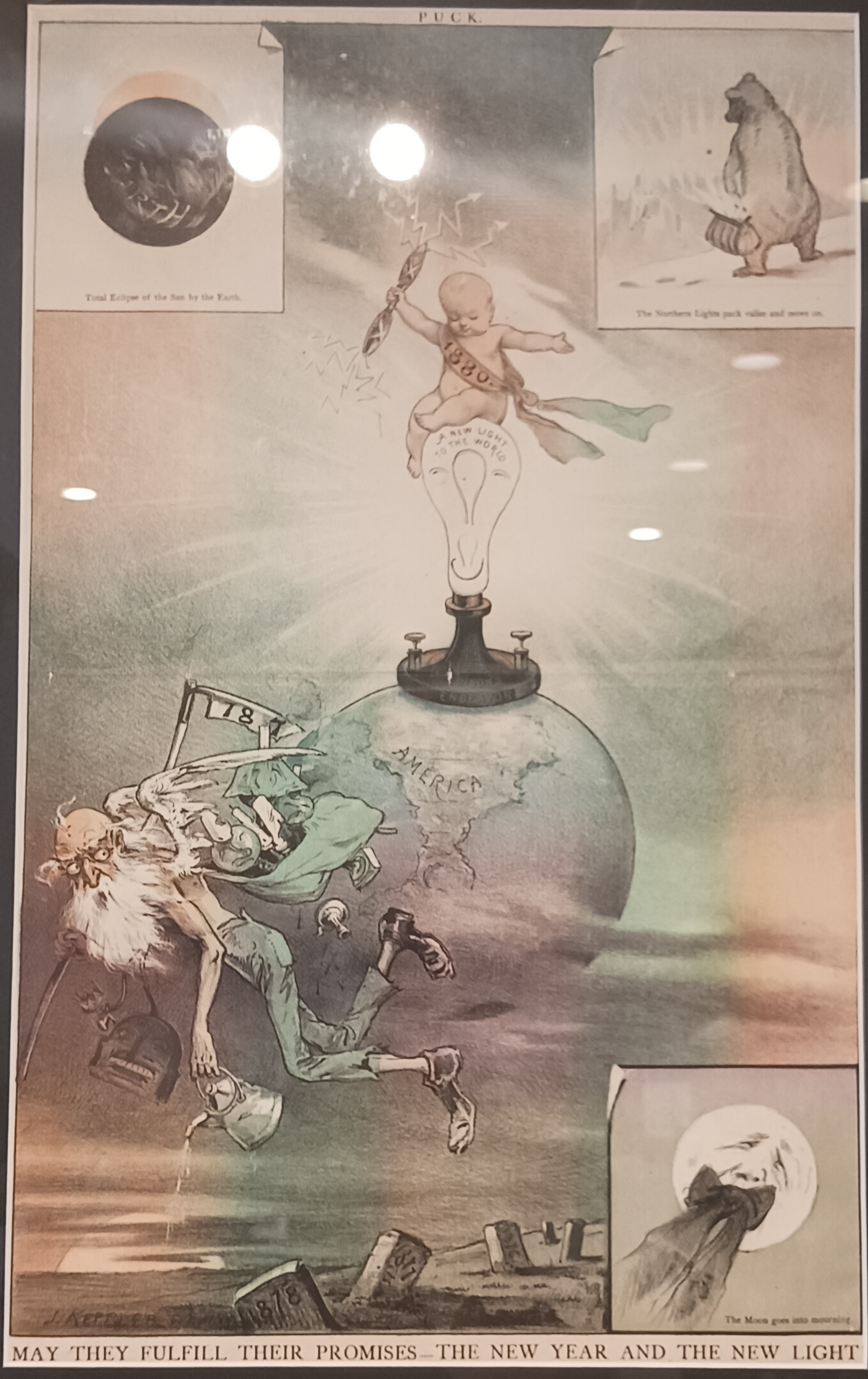
Original photograph of the Machine Shop & Crew,
Menlo Park, NJ



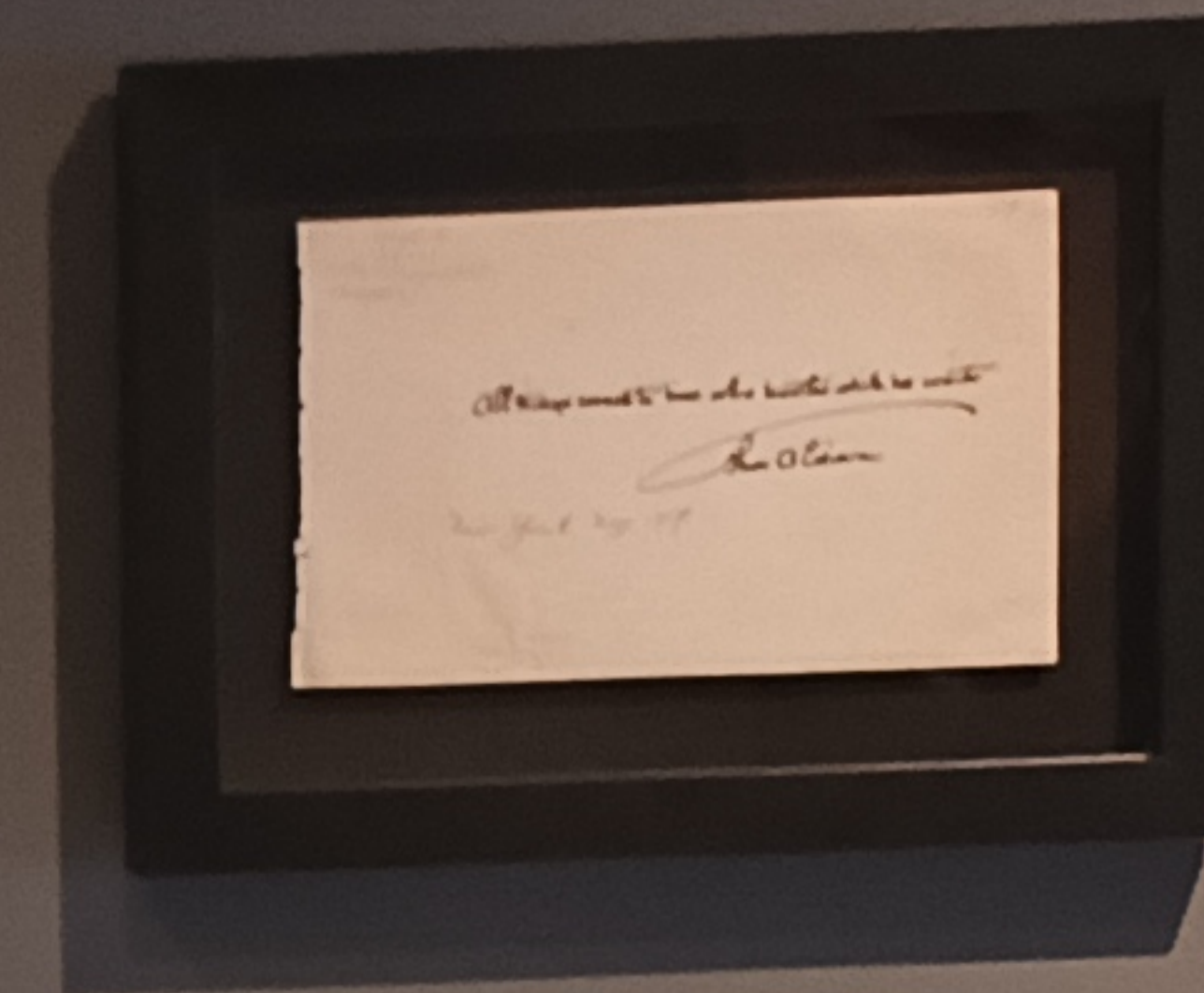
Original cyanotype photo of the Edison team,
front porch, Menlo Park lab
 Provenance: Charles E. Clarke collection



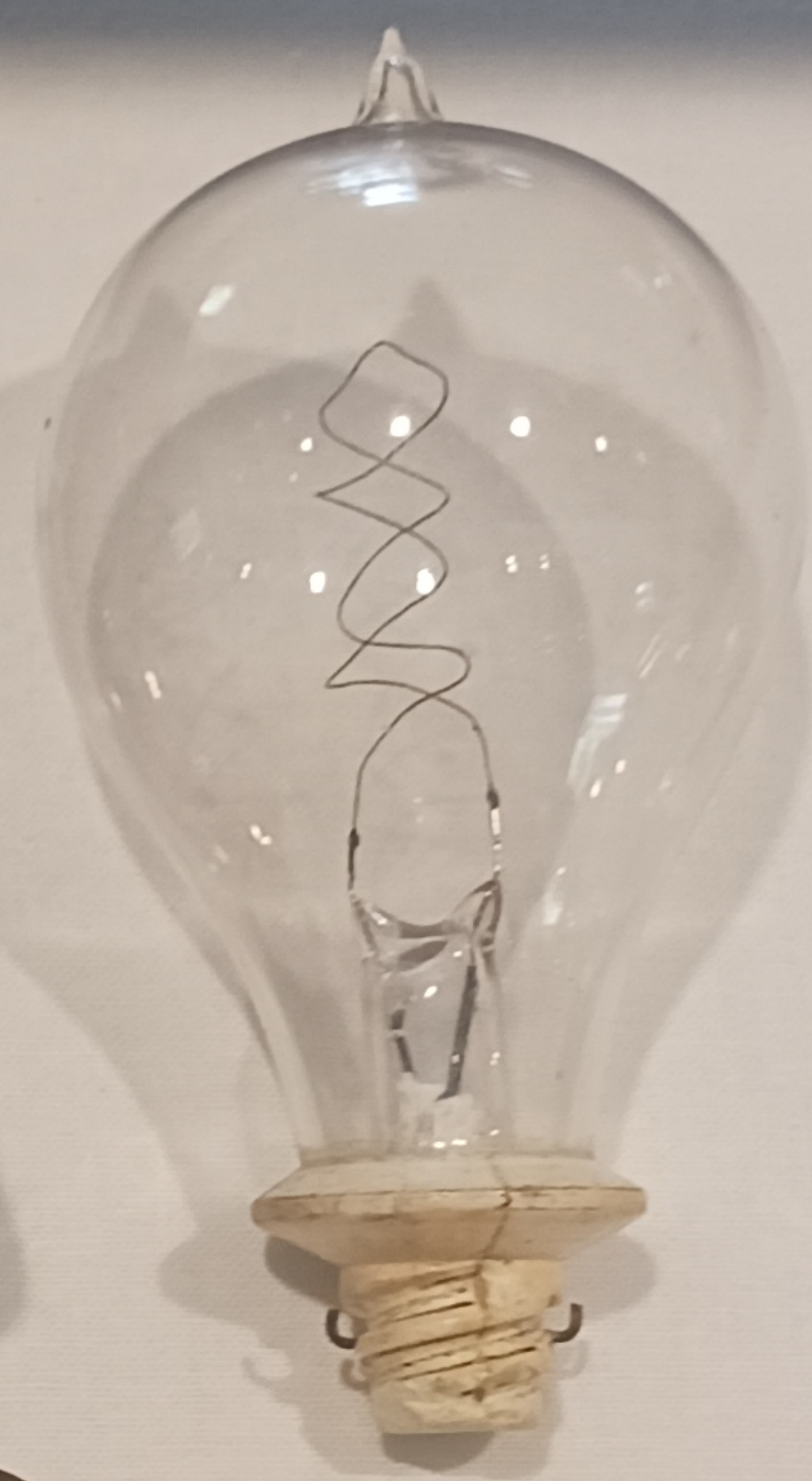
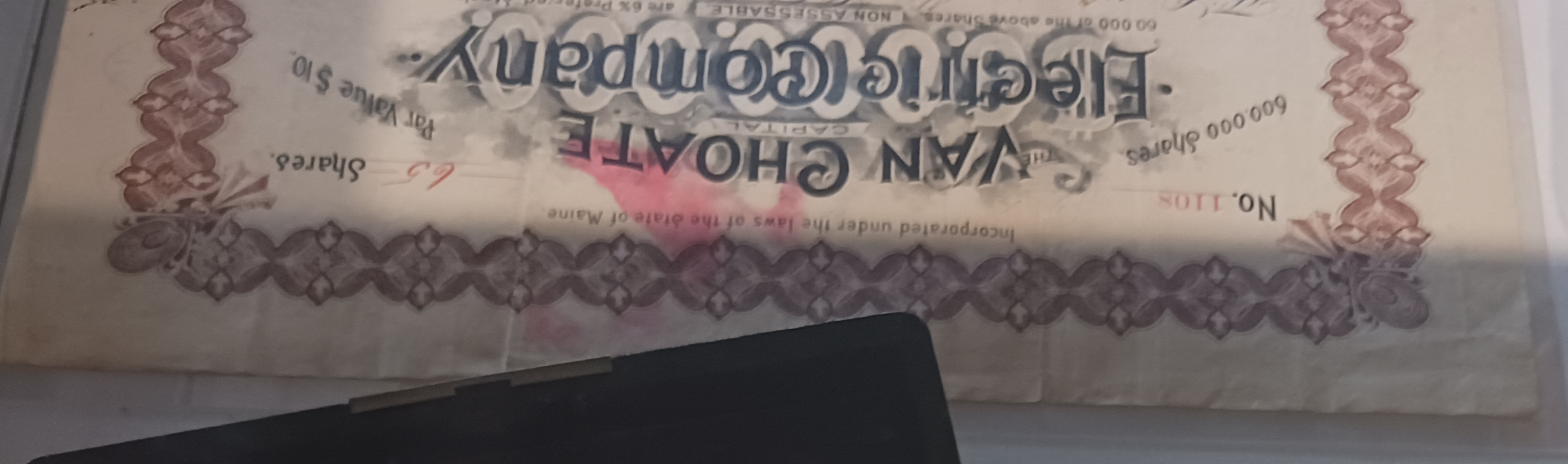
Original photograph of the first lamp factory,
Menlo Park, N.J.



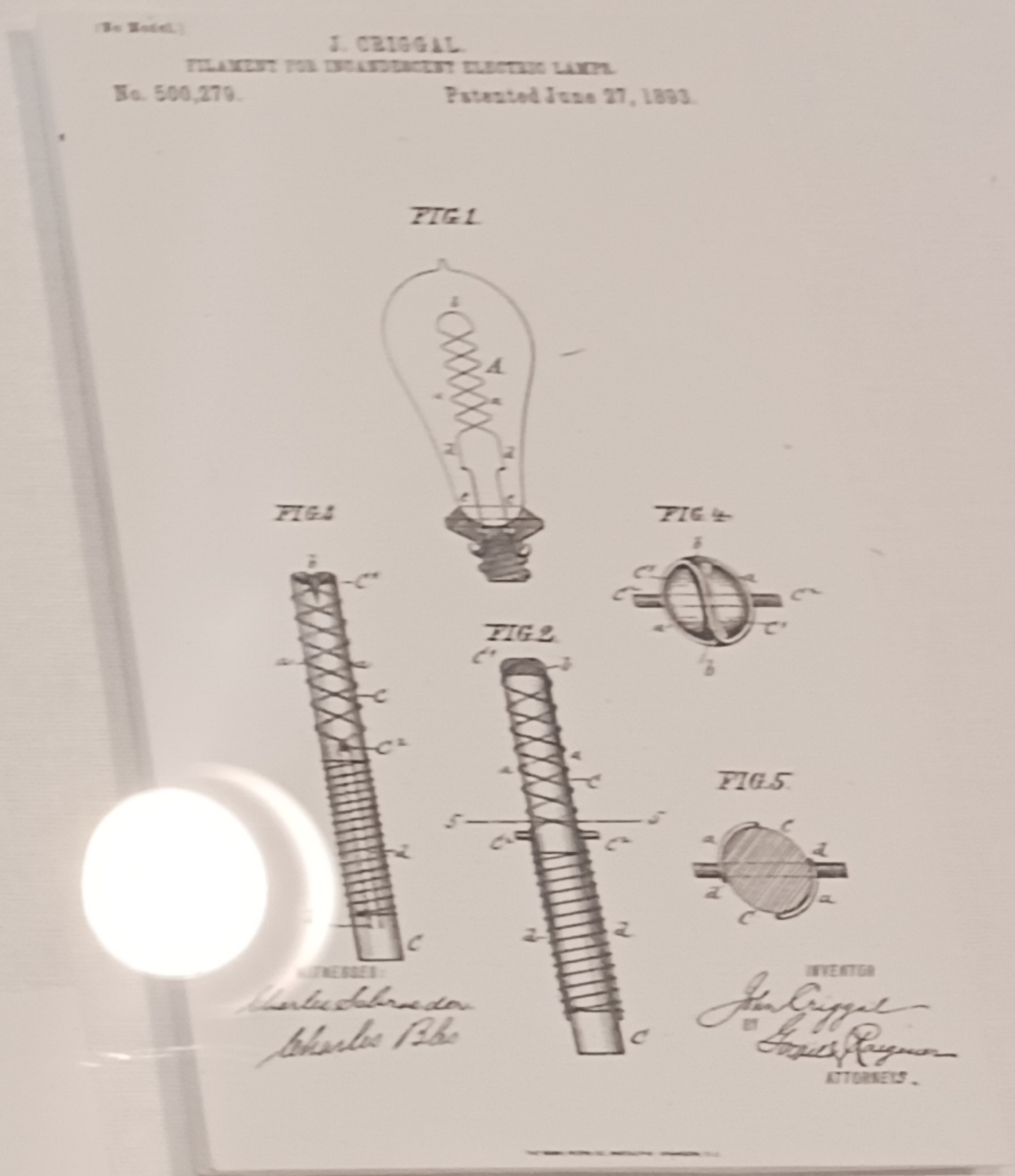
*"All things come to him
who hustles while
he waits"* -Thomas A. Edison







Criggal Interchangeable Base
"Salesmans Sample"
c. 1893

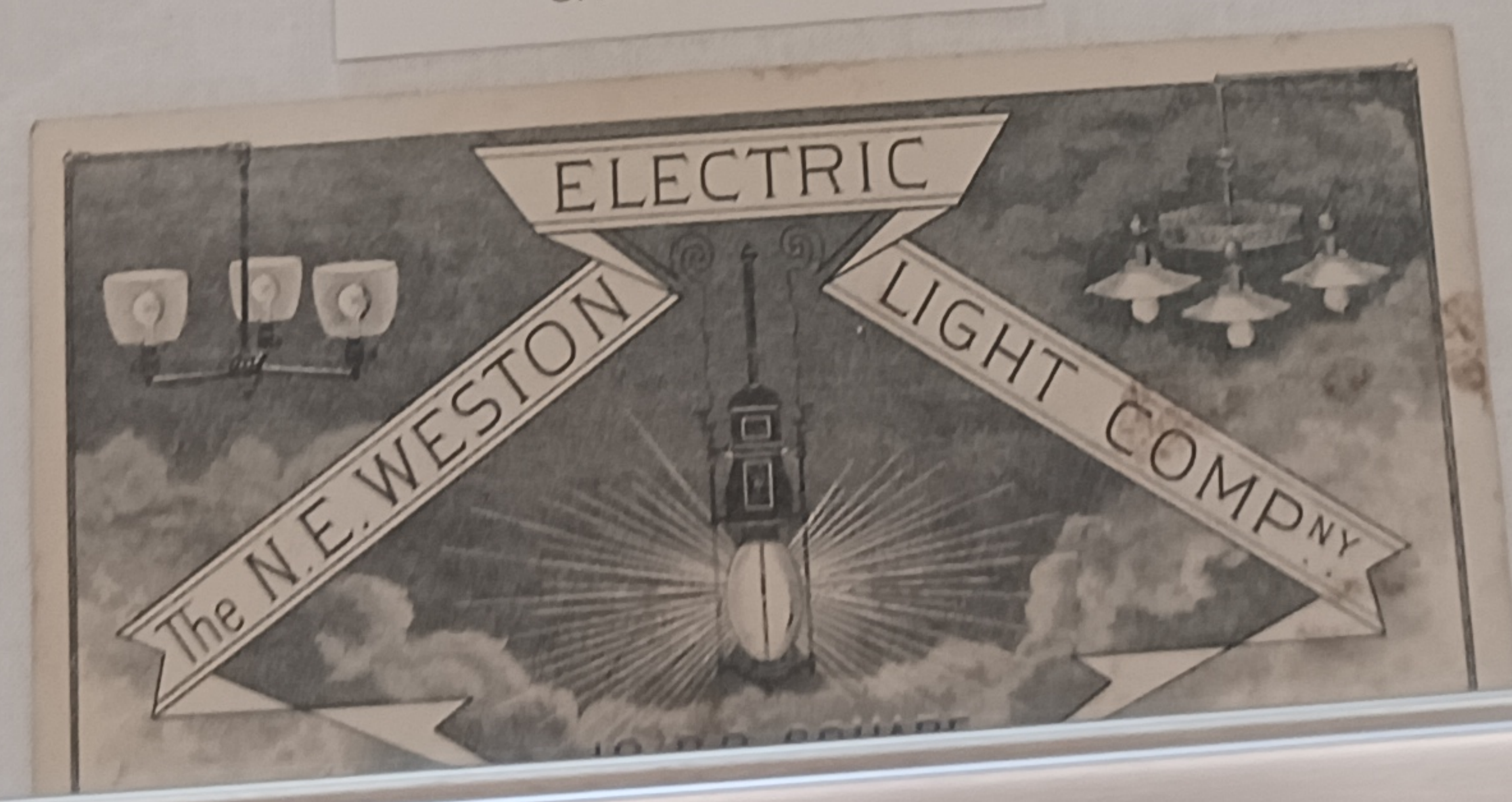


Criggl Interchangeable Base
"Salesman's Sample"
c. 1893

Handwritten notes and diagrams on a small card, including the name "Richardson" and dates "March 1888" and "April 1888".

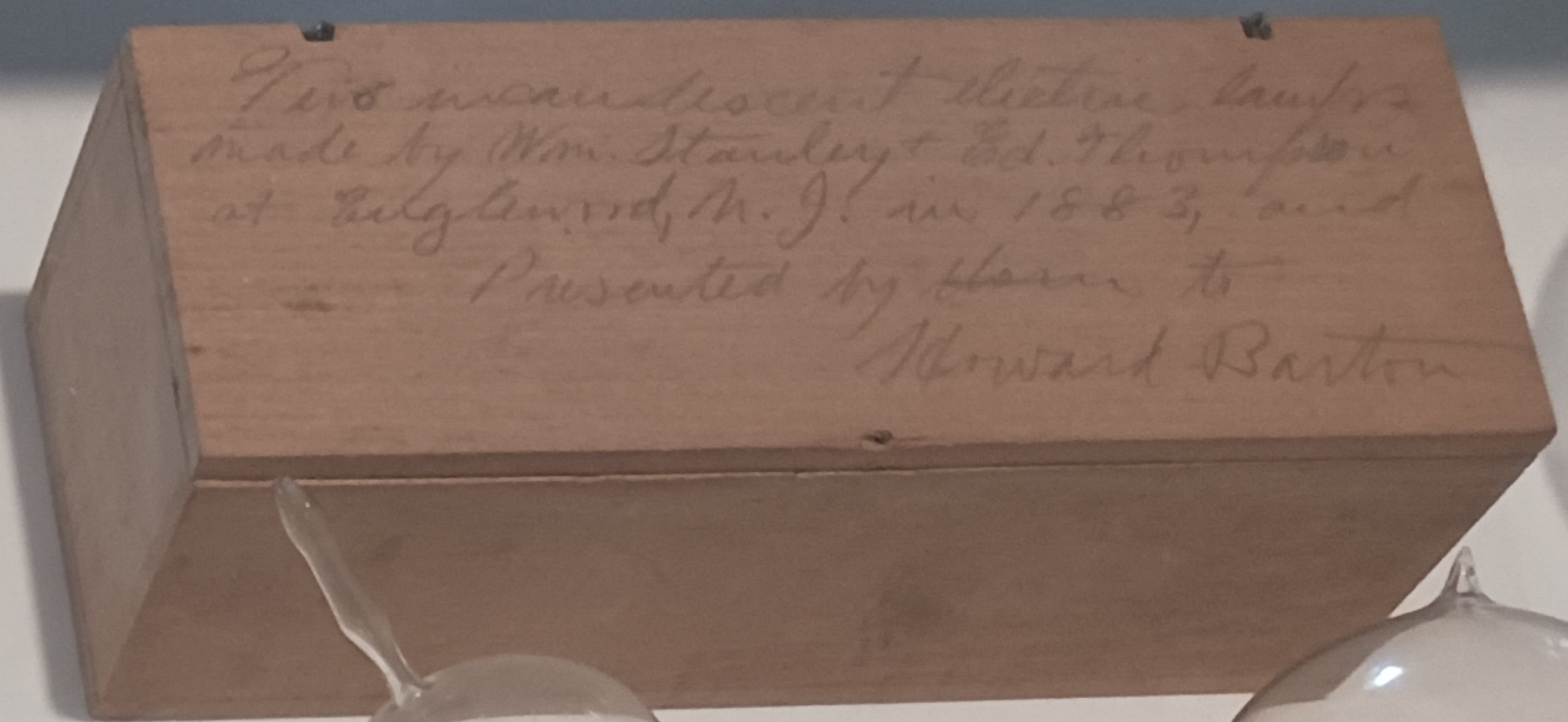


United States Electric Light Co.
C. Mid 1880's





Brush Electric Light Co

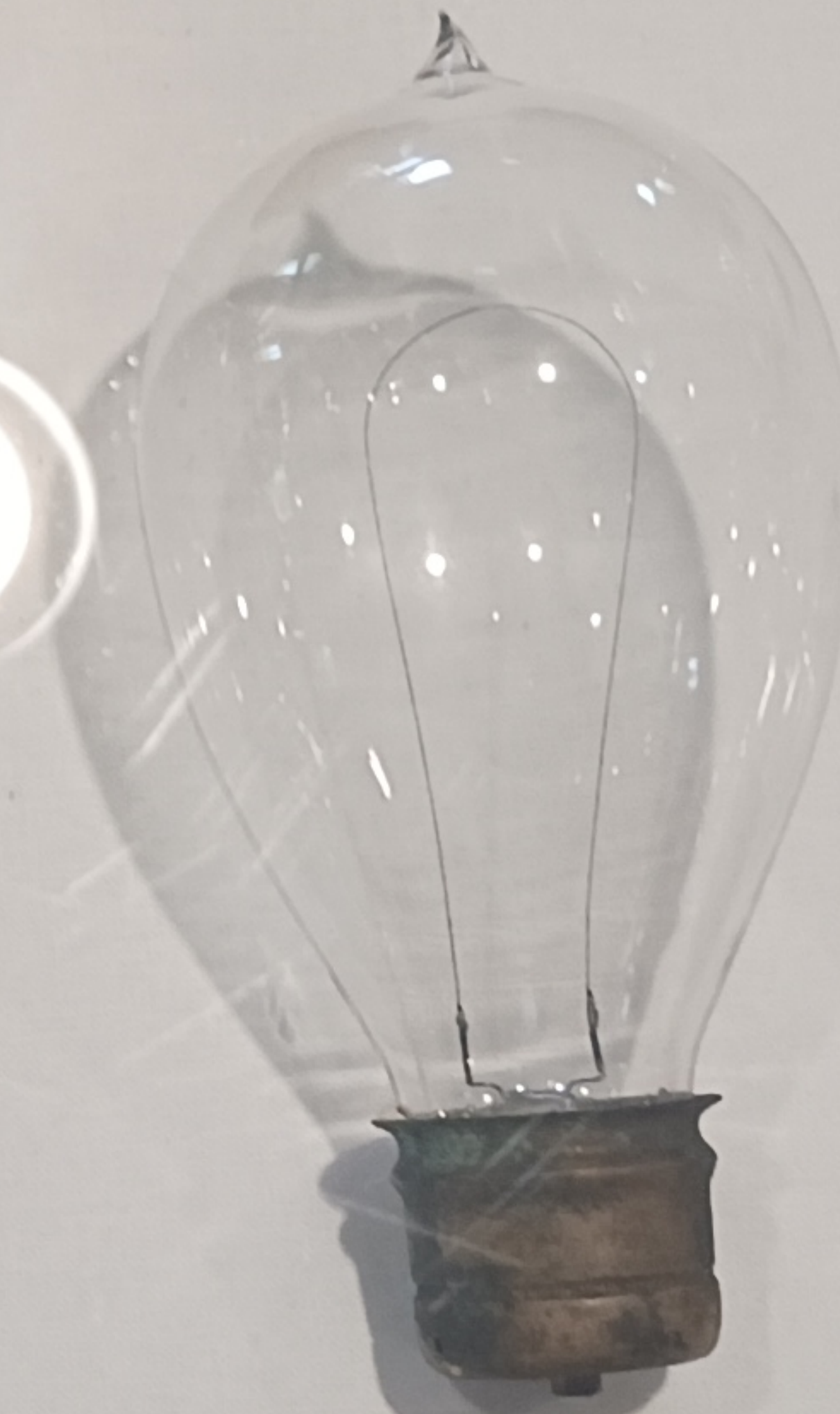
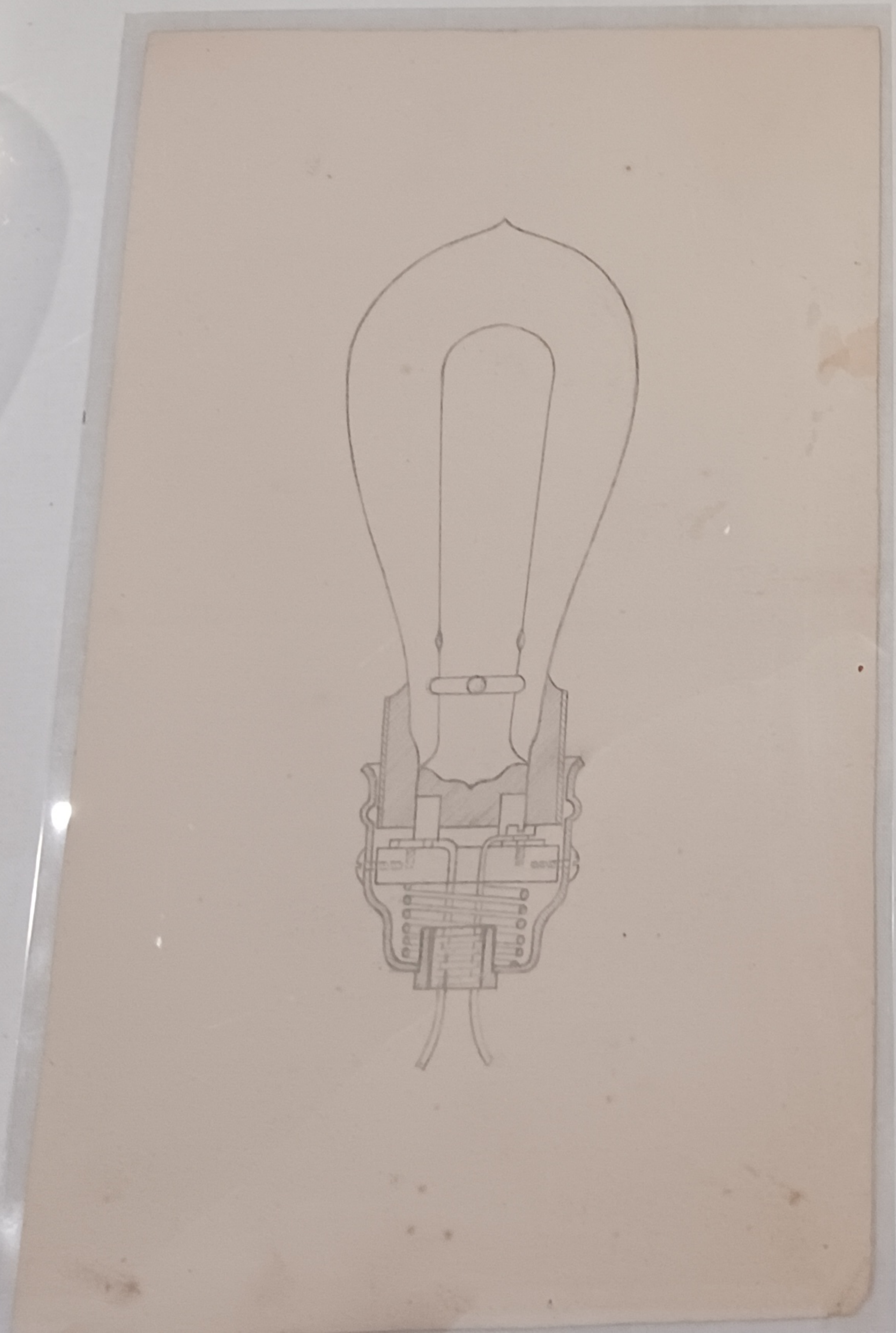


Two incandescent electric lamps
made by Wm. Stanley & Ed. Thompson
at Englewood, N. J. in 1883, and
Presented by them to
Howard Barton

William Stanley
experimental lamp - 1883

One of the earliest
incandescent lamps
made by Wm. Stanley
at Englewood, N. J. in 1883

William Stanley
circa 1883



Westinghouse Electric and
Manufacturing Company



First successful electric lamp made by William Stanley at Edison's house at Menlo Park, N.J. in 1883. Presented by him to Howard Barton

William Stanley
experimental lamp - 1883

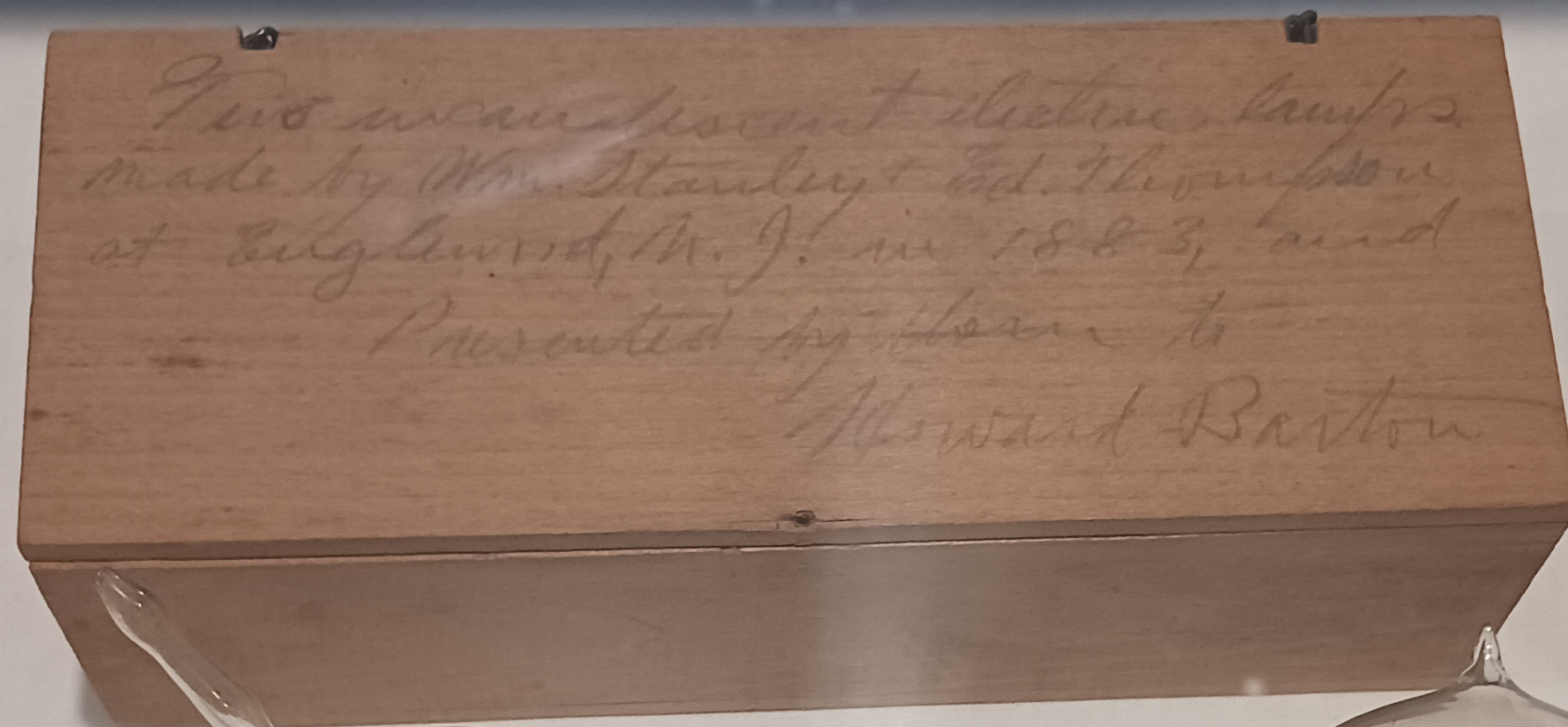
First successful electric lamp made by William Stanley at Edison's house at Menlo Park, N.J. in 1883. Presented by him to Howard Barton

William Stanley
1885

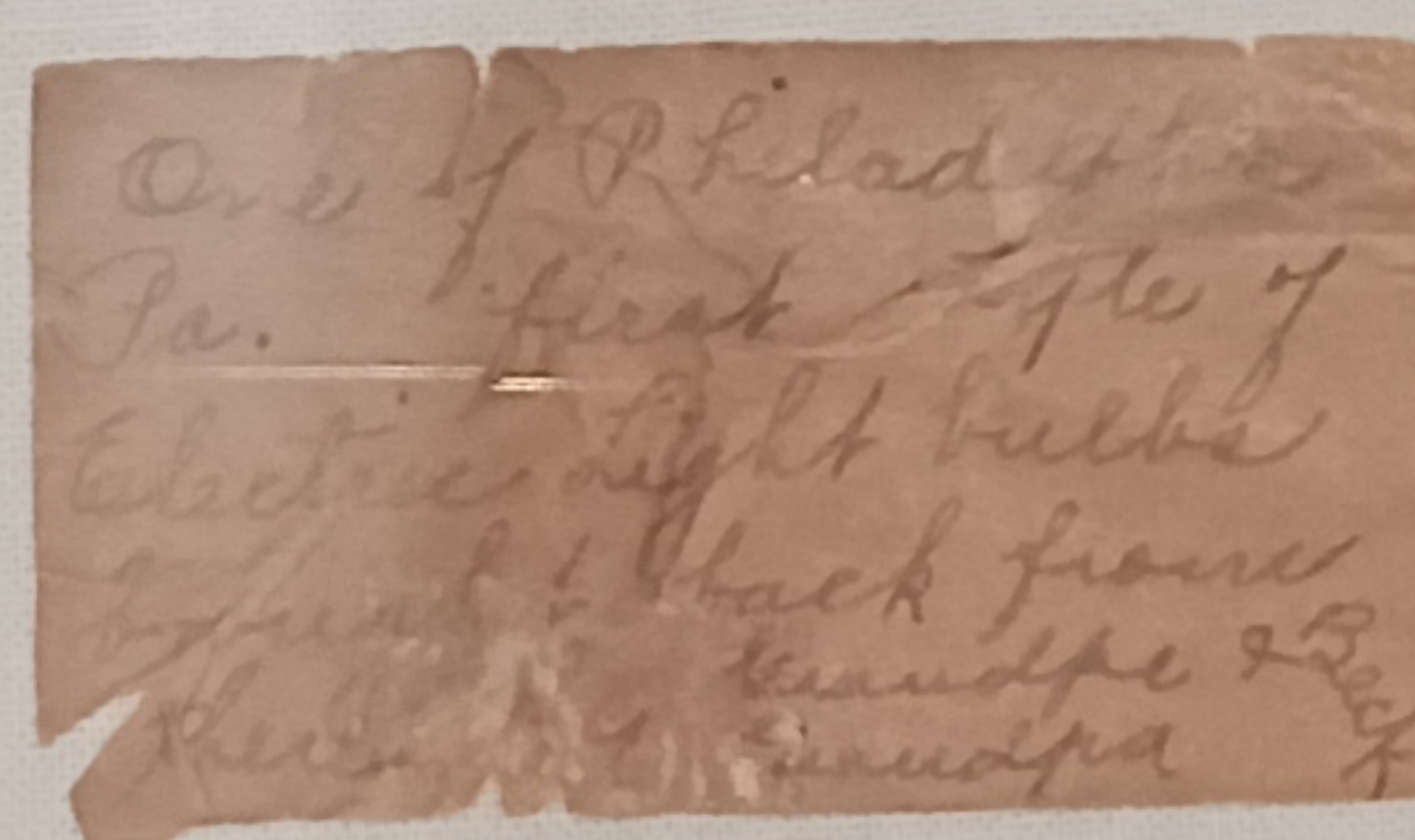
Thomson Houston

Siemens & Halske

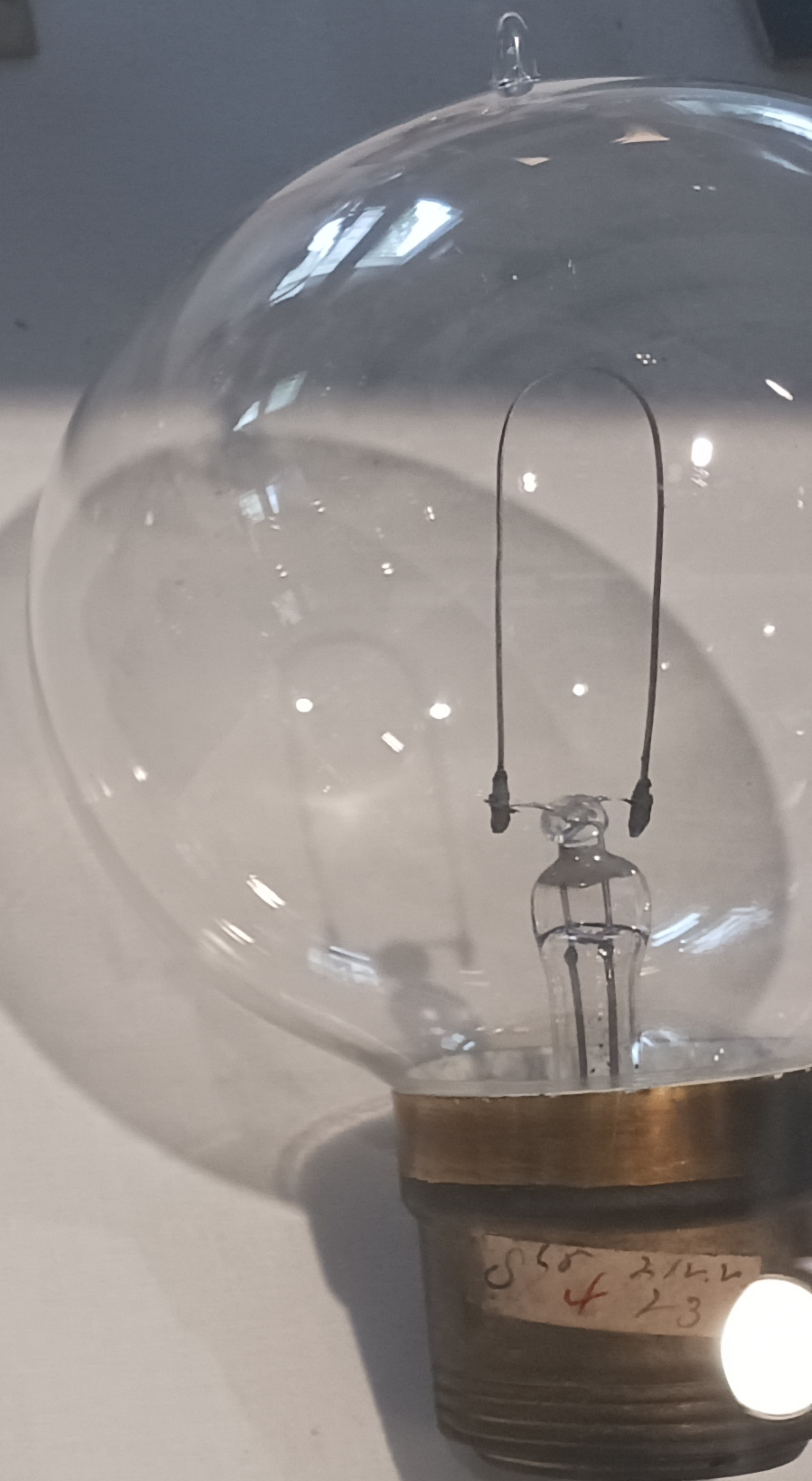
Westinghouse Electric and
Manufacturing Company



William Stanley
experimental lamp ~ 1883



William Stanley
circa ~ 1885



Thomson Houston



1881 Edison 100 cp "Bottle Form" Incandescent L
Provenance: The William Hammer Collection



Handwritten notes on a piece of paper, including the name 'Edison' and some illegible text.



Handwritten note on a piece of paper, dated 'AUGUST, 1887', mentioning 'EDISON MACHINE WORKS' and 'INSULATING DEPARTMENT'.



I am going to go into this matter elaborately when I get into New Laboratory which will be Oct 15th with facilities I will have can settle any thing in short time

Mr Edison

Will please try the experiment to mix with Cuban (Prima) and some Rosin oil for compound. Old experiments show as regards insulation exceedingly good results. I think it would be very much better than Sassafras oil. It is better

My man thinks if you can pour compound at 300

Form U
EDISON ELECTRIC ILLUMINATING COMPANY OF NEWBURG, N. Y.
NEWBURG, N. Y. July 24th 1887
M. J. H. Gaye
Premises No. 11 Water Street.
To THE EDISON ELECTRIC ILLUMINATING CO. OF NEWBURG.
For Electric Light supplied from June 23 to July 23
373 Standard Lamp hours at \$12.00 per M \$4.66
A 10 Candle Lamp burning one hour represents one standard lamp hour

19
All things come to him who hustles while he waits

Thos A Edison

New York, May, 1917.

...e to him

...ile

A. Edison





Thomson Houston
c. 1885



Sun Electric
c. 1887



Woodhouse & Rawson
c. Mid 1880's



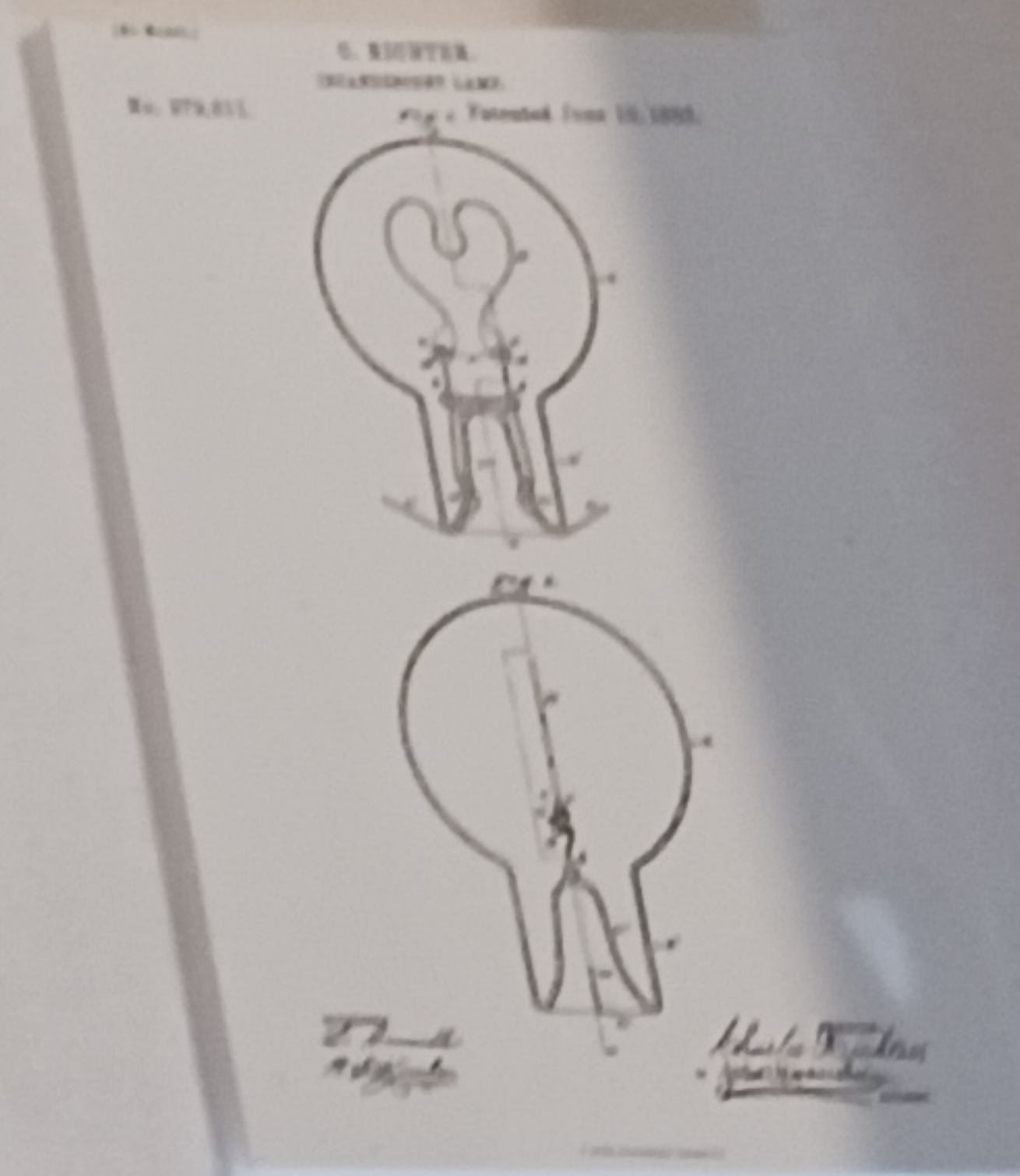
Von Choate
c. 1887



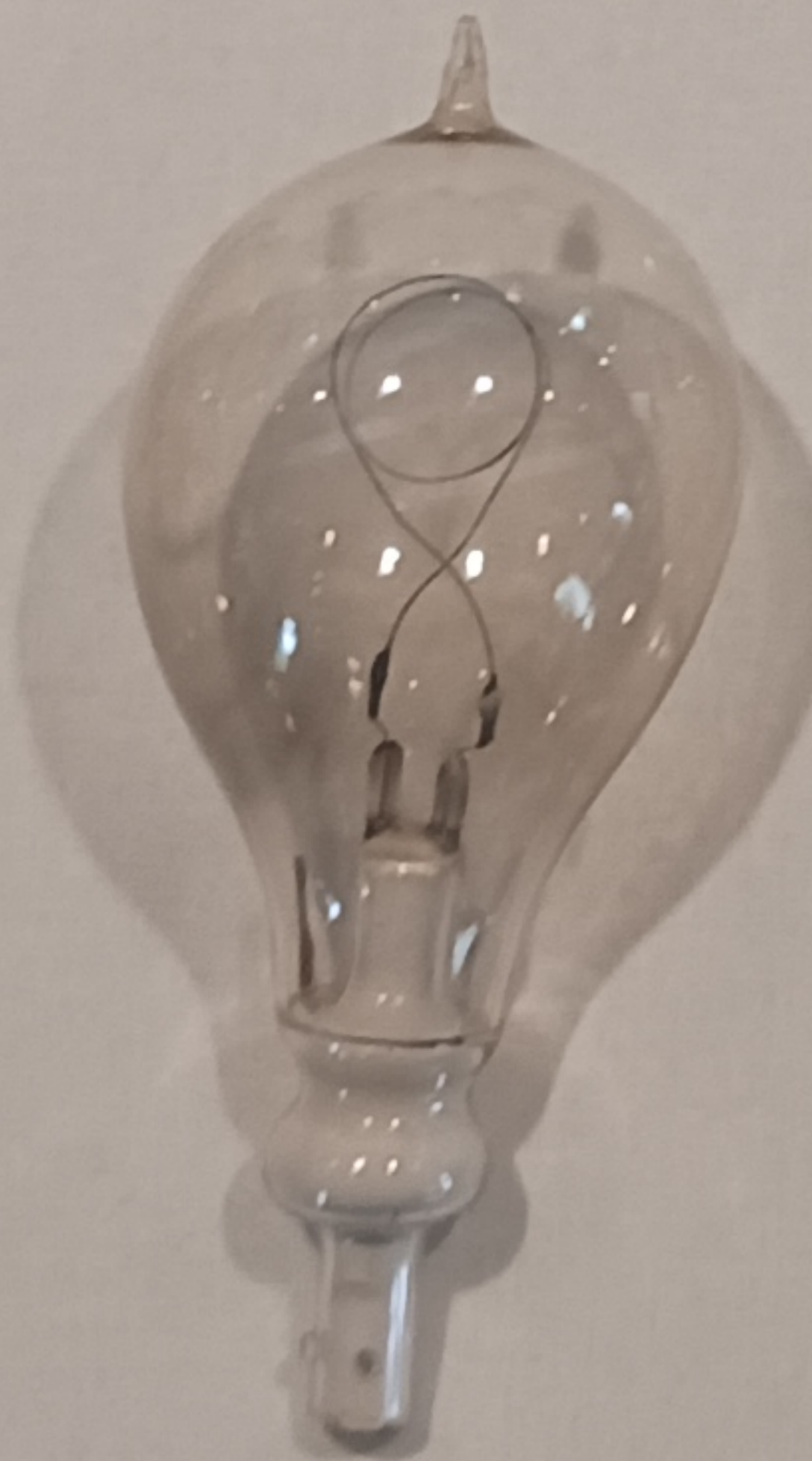
Müller Lamp
c. 1883



Charles Richter
c. 1883



Müller Nothombe
Belgium c. 1882



Greinert & Friedrich

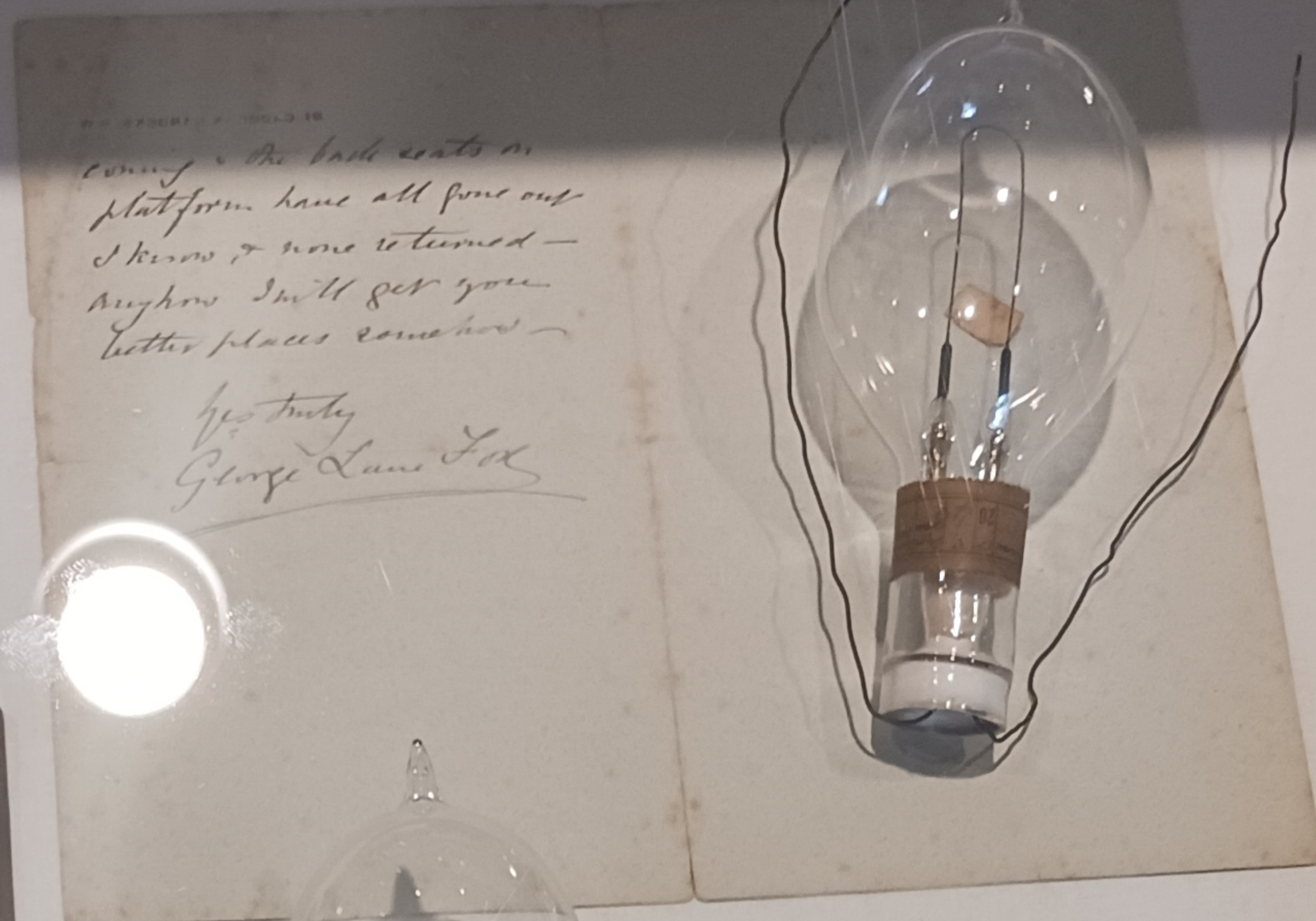


Bernstein

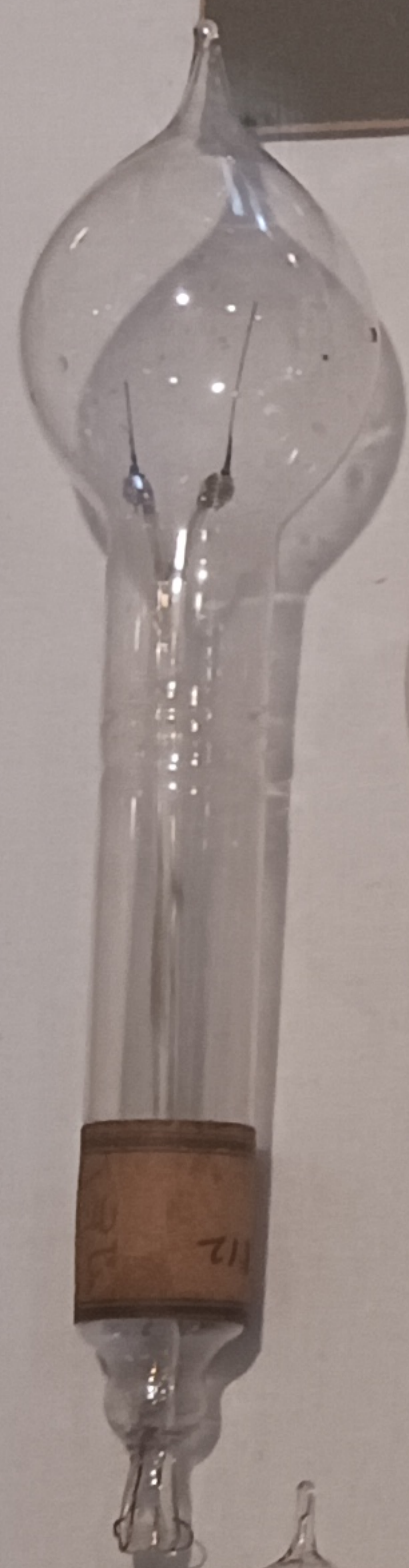
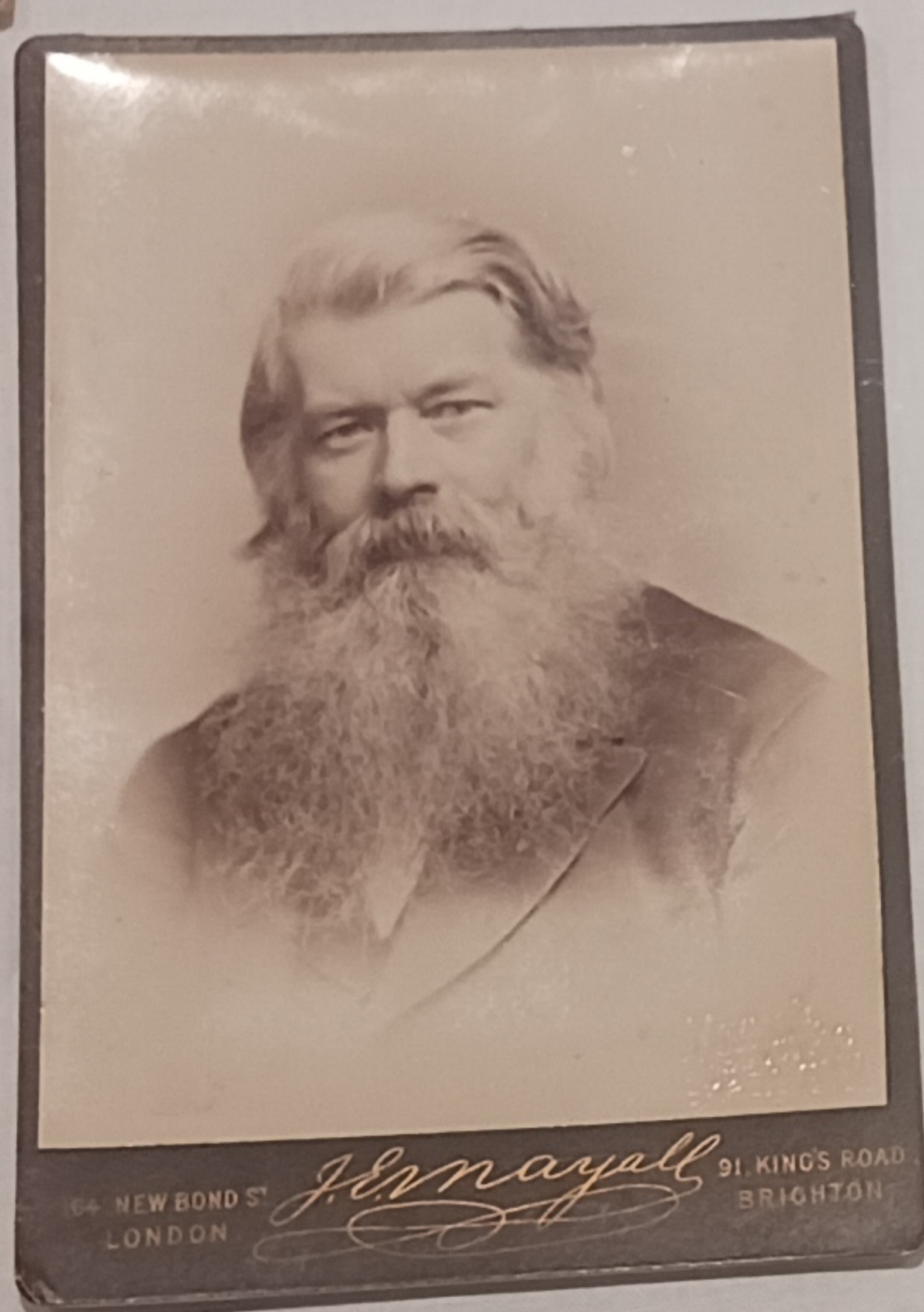


William Crookes
1862

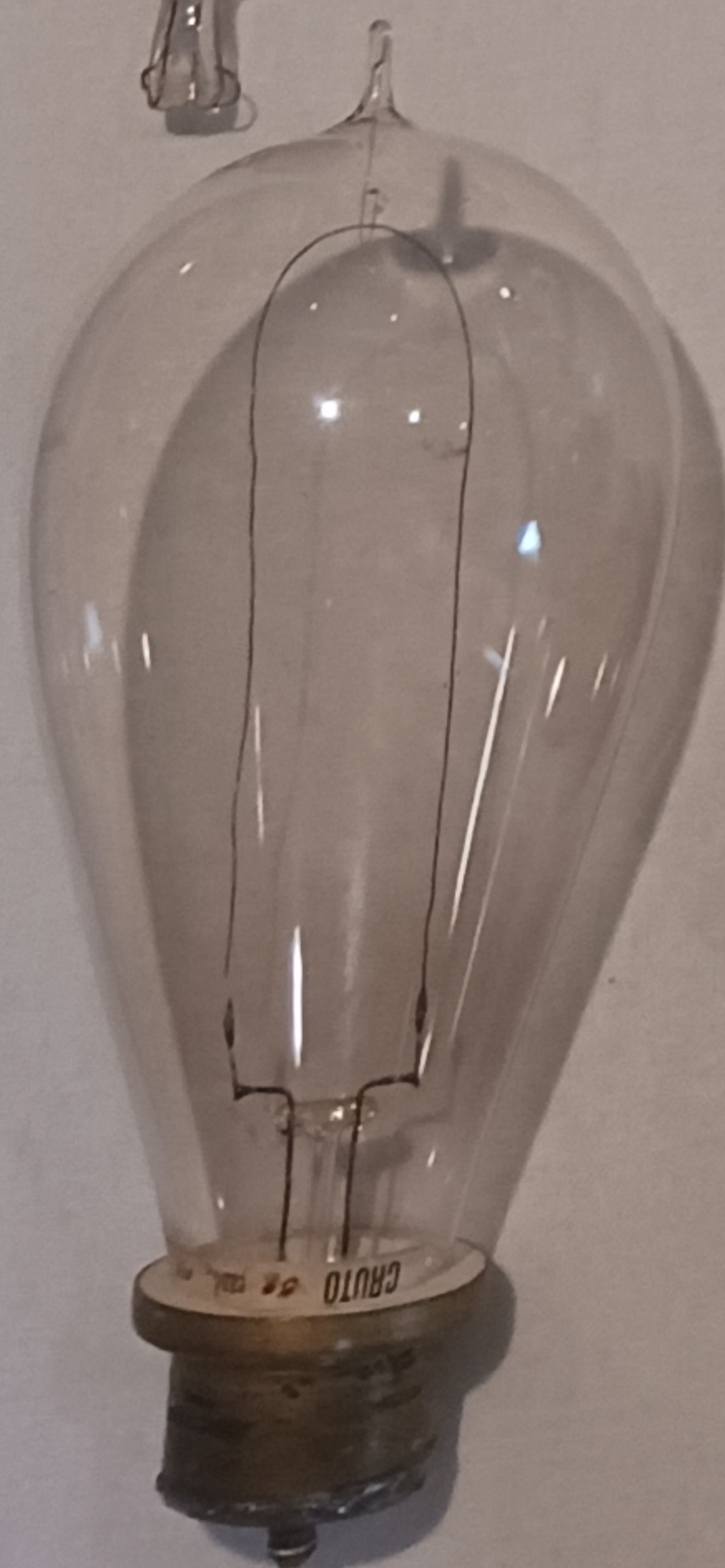




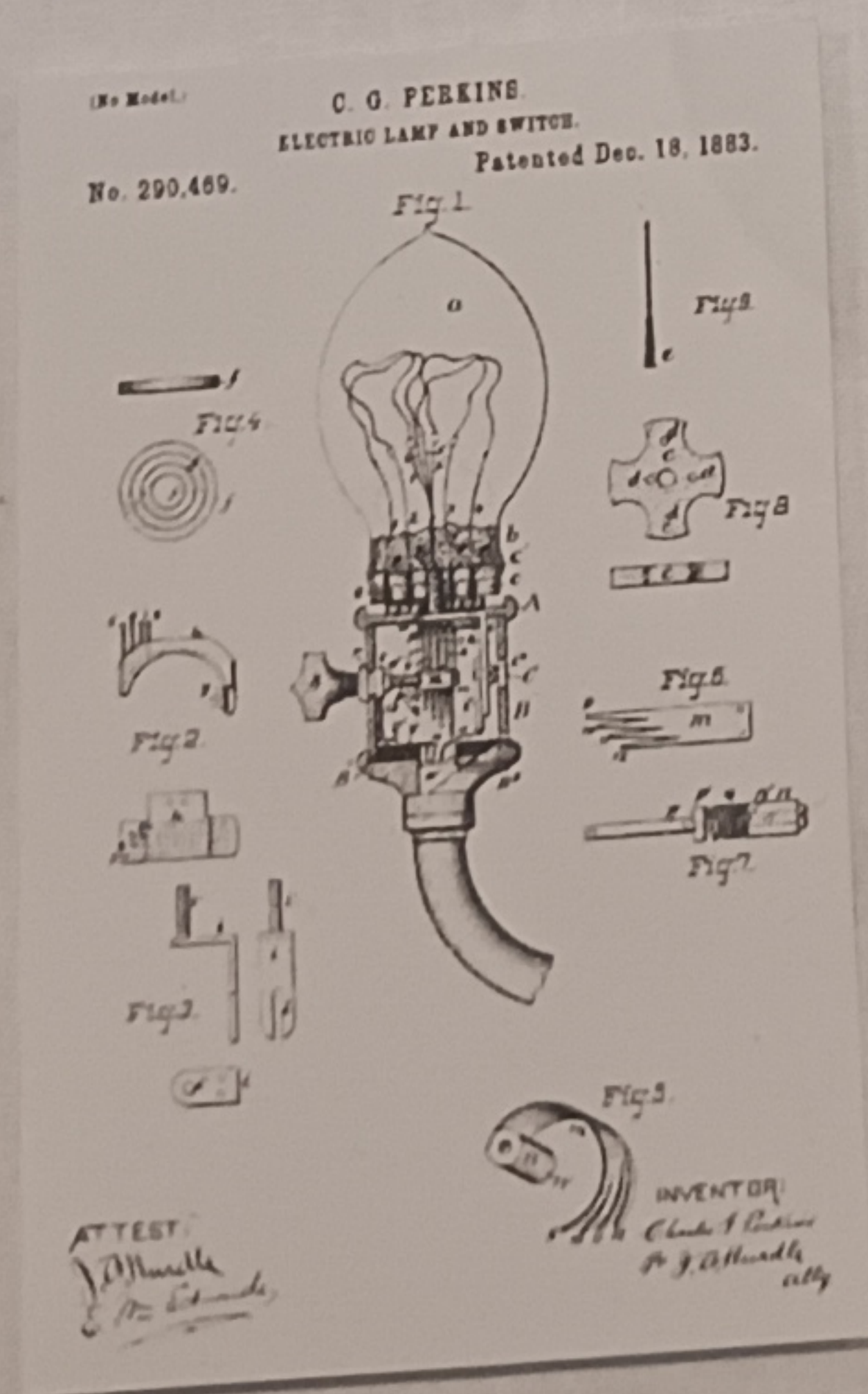
Lane Fox
c. 1882



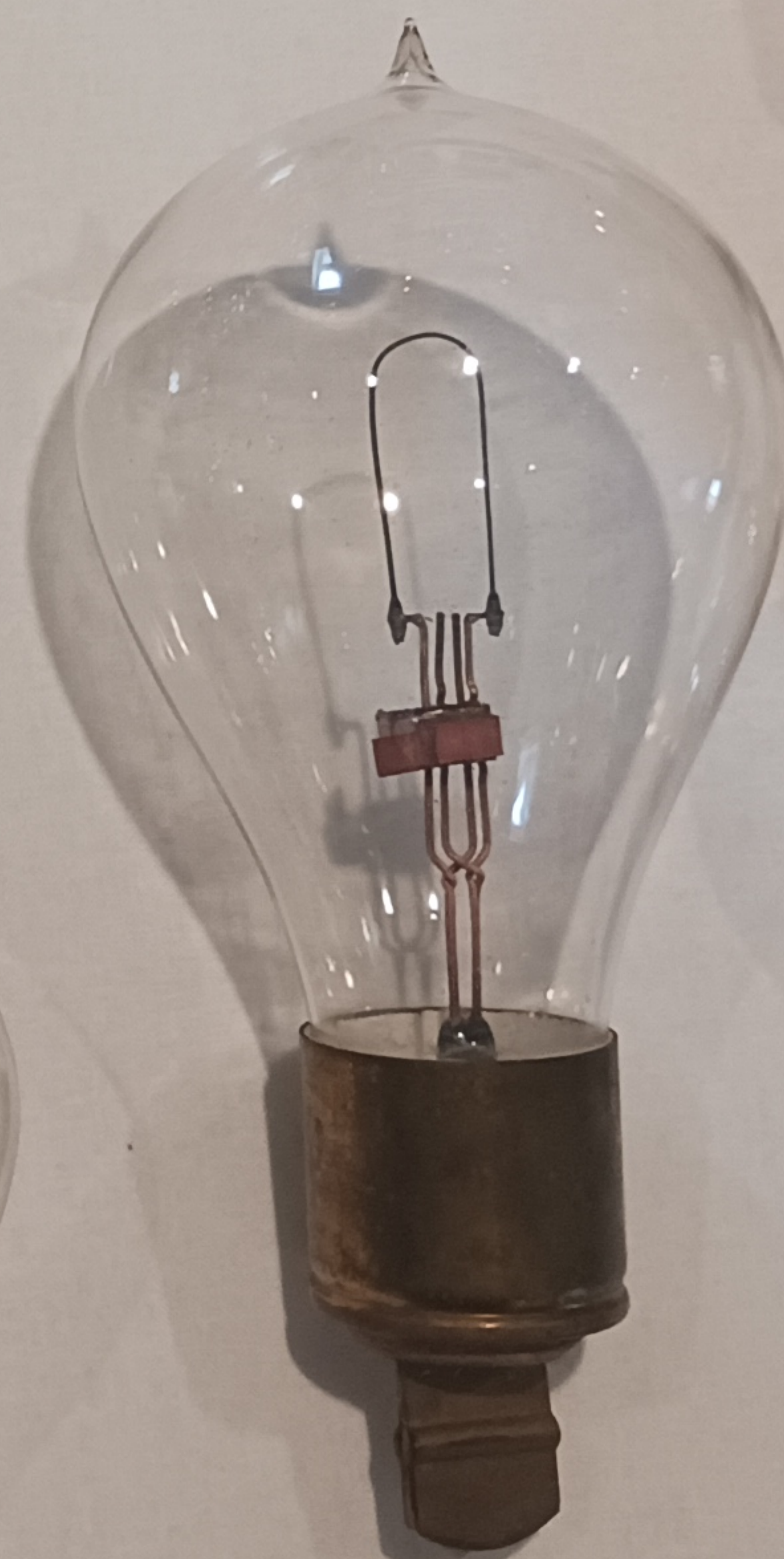
Swan Electric Light Co.
c. 1881-1885



Alessandro Cruto
Italy c. Mid 1880's



Mather Electric Co.
Charles Perkins Patents
c. 1884-85



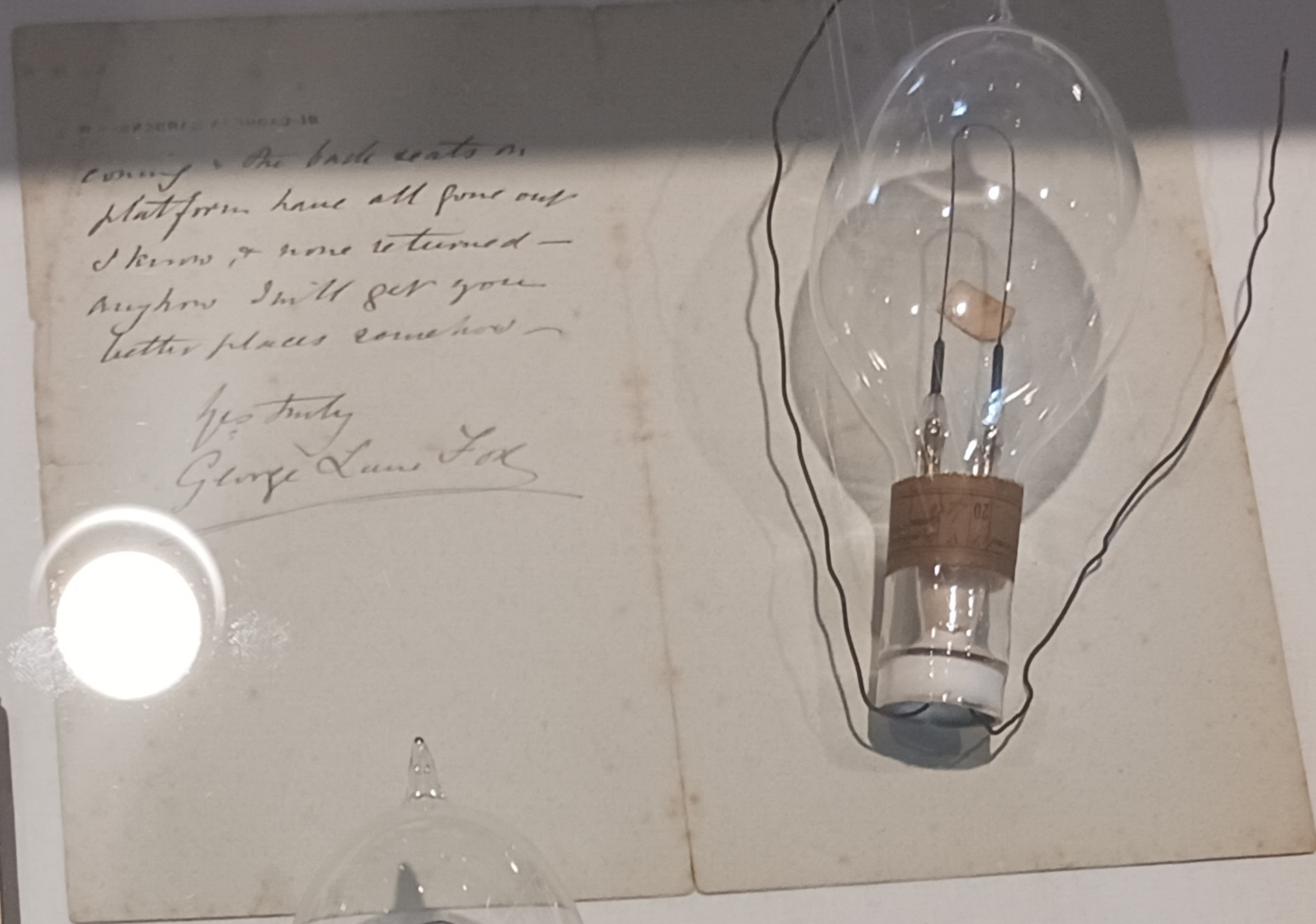
Schuyler Electric Light Co.
c. Late 1880's



Luminoid
with Hawkeye Base
c. 1886



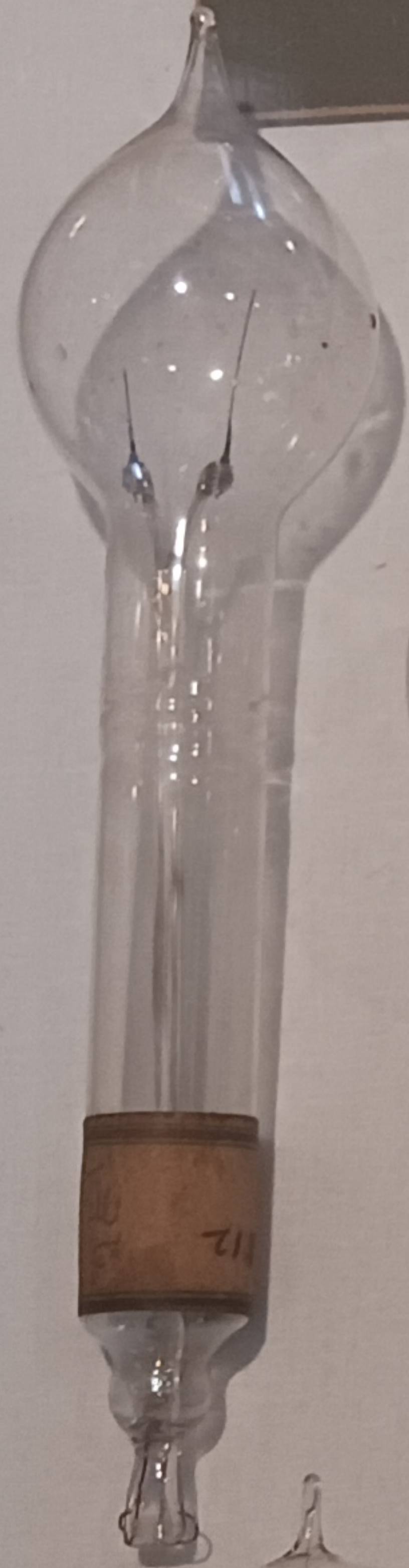
Gerard "Candelabra"
Exhibited at 1889 Paris Exhibition



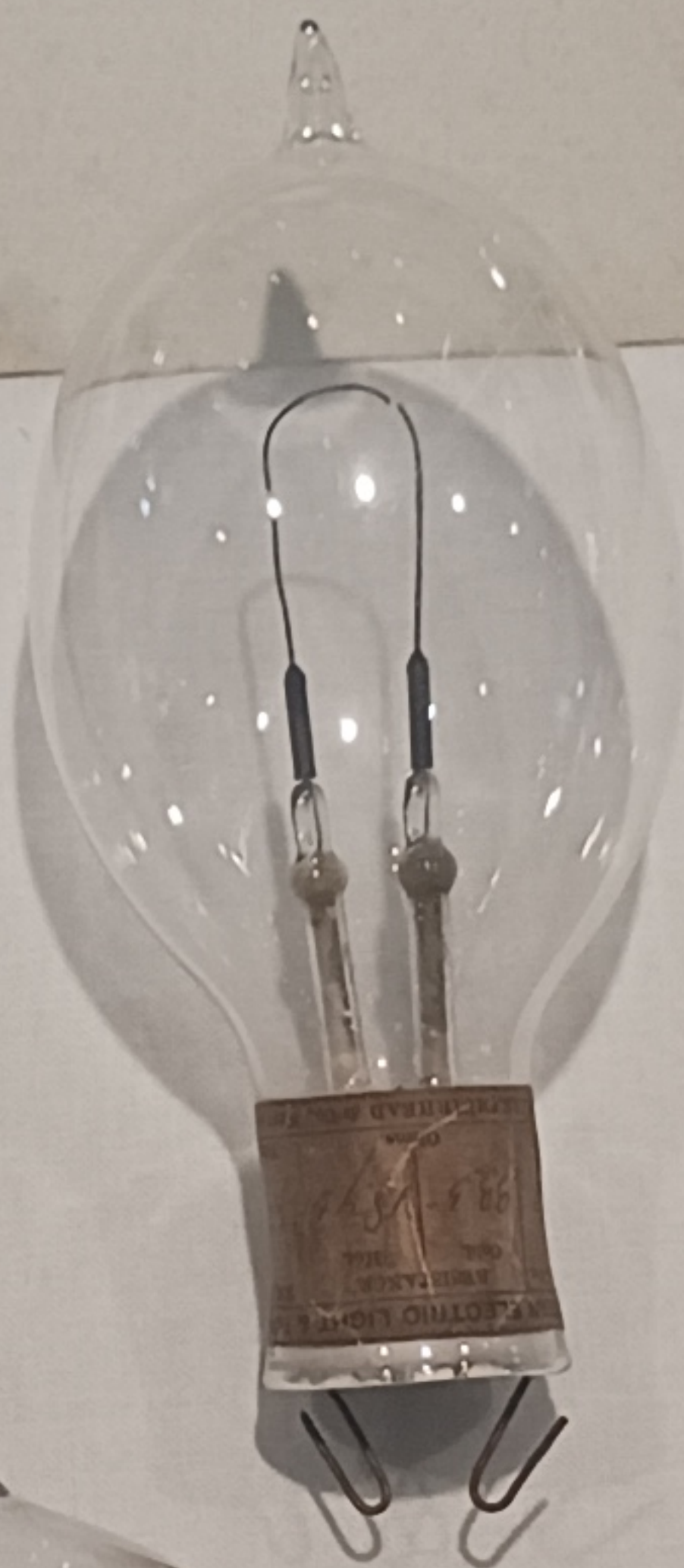
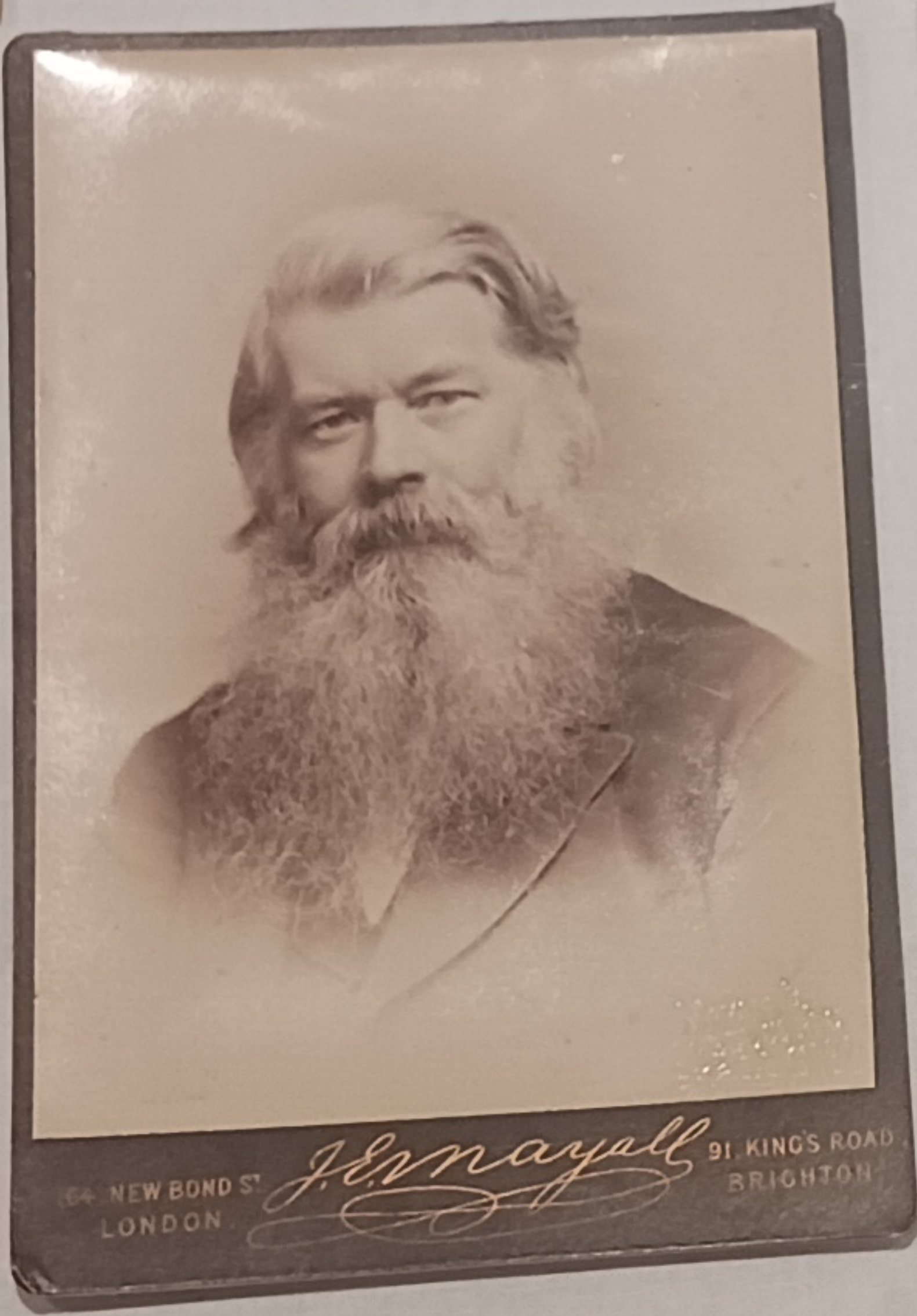
Lane Fox
c. 1882



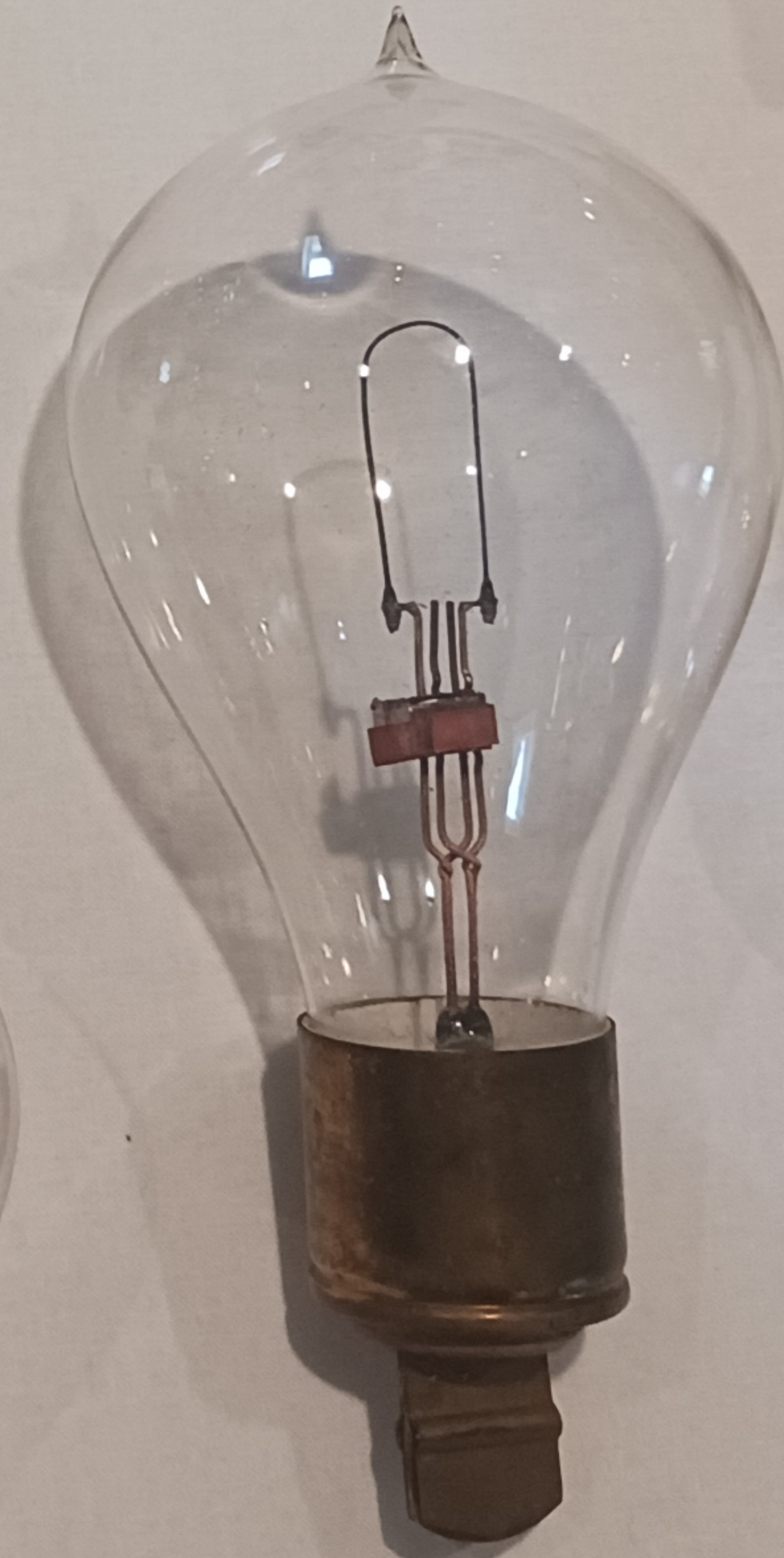
Gerard "Candelabra"
Exhibited at 1889 Paris Exhibition



Swan Electric Light Co.
c. 1881-1885



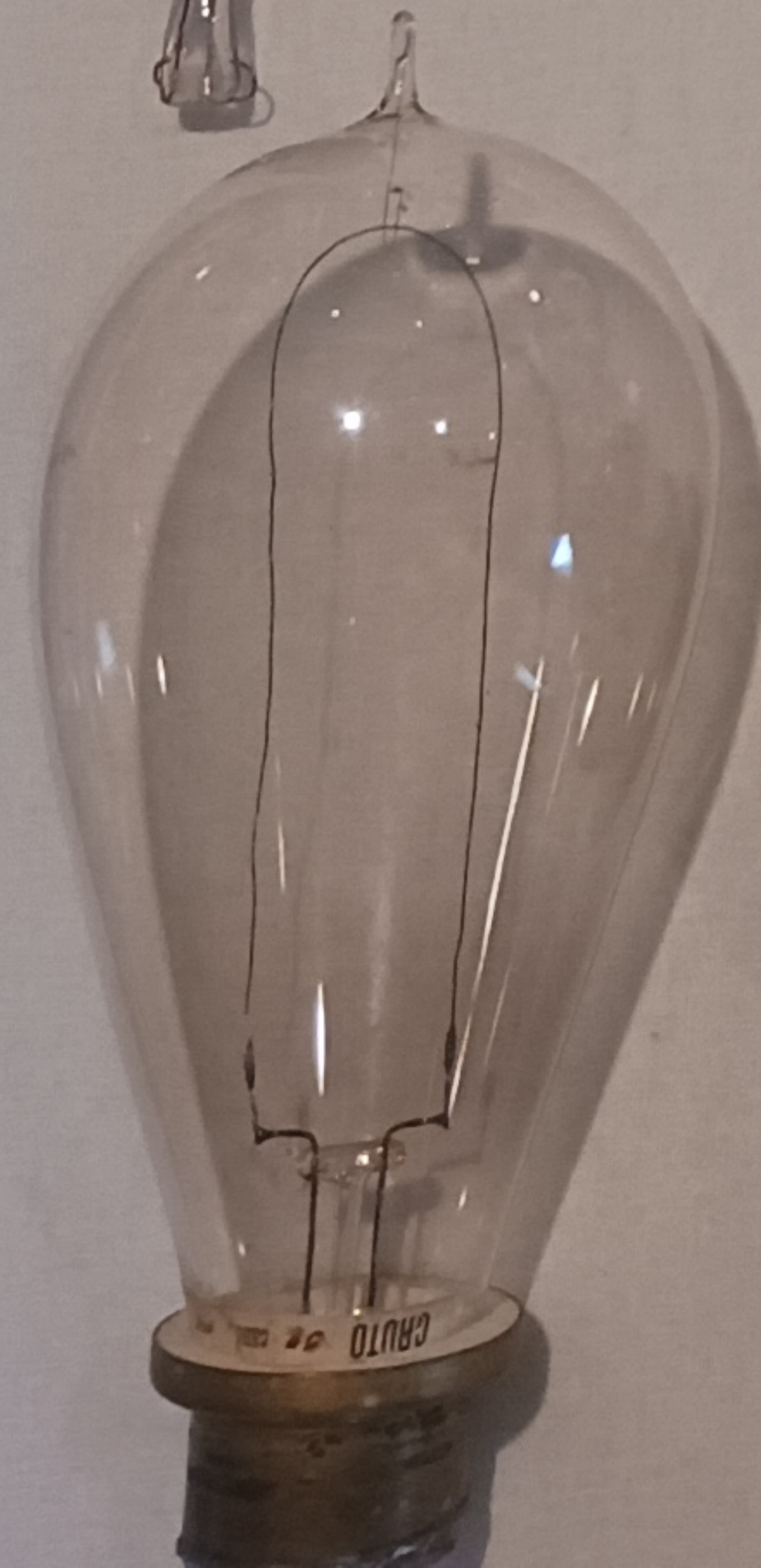
Mather Electric Co.
Charles Perkins Patents
c. 1884-85



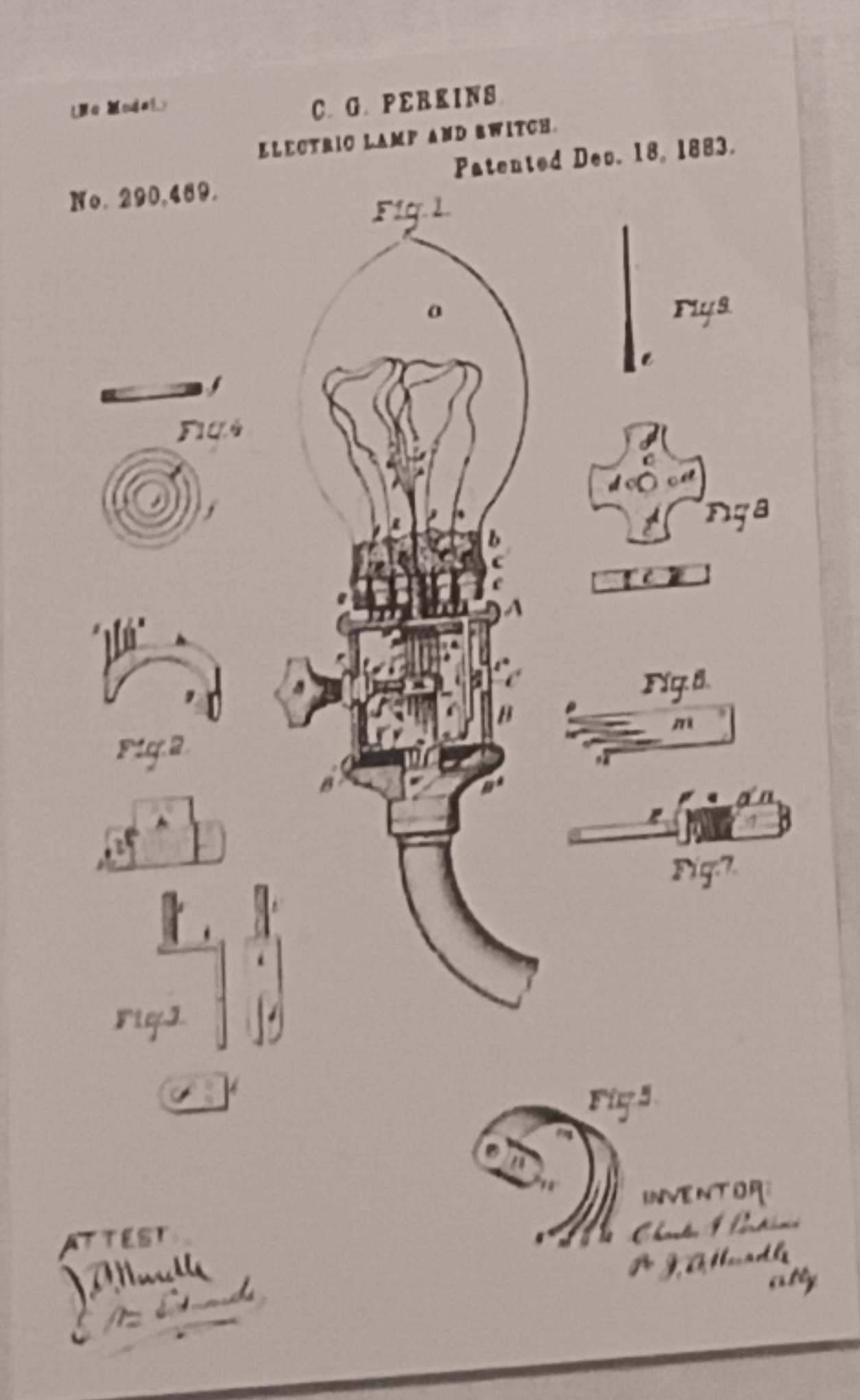
Schuyler Electric Light Co.
c. Late 1880's



Luminoid
with Hawkeye Base
c. 1886



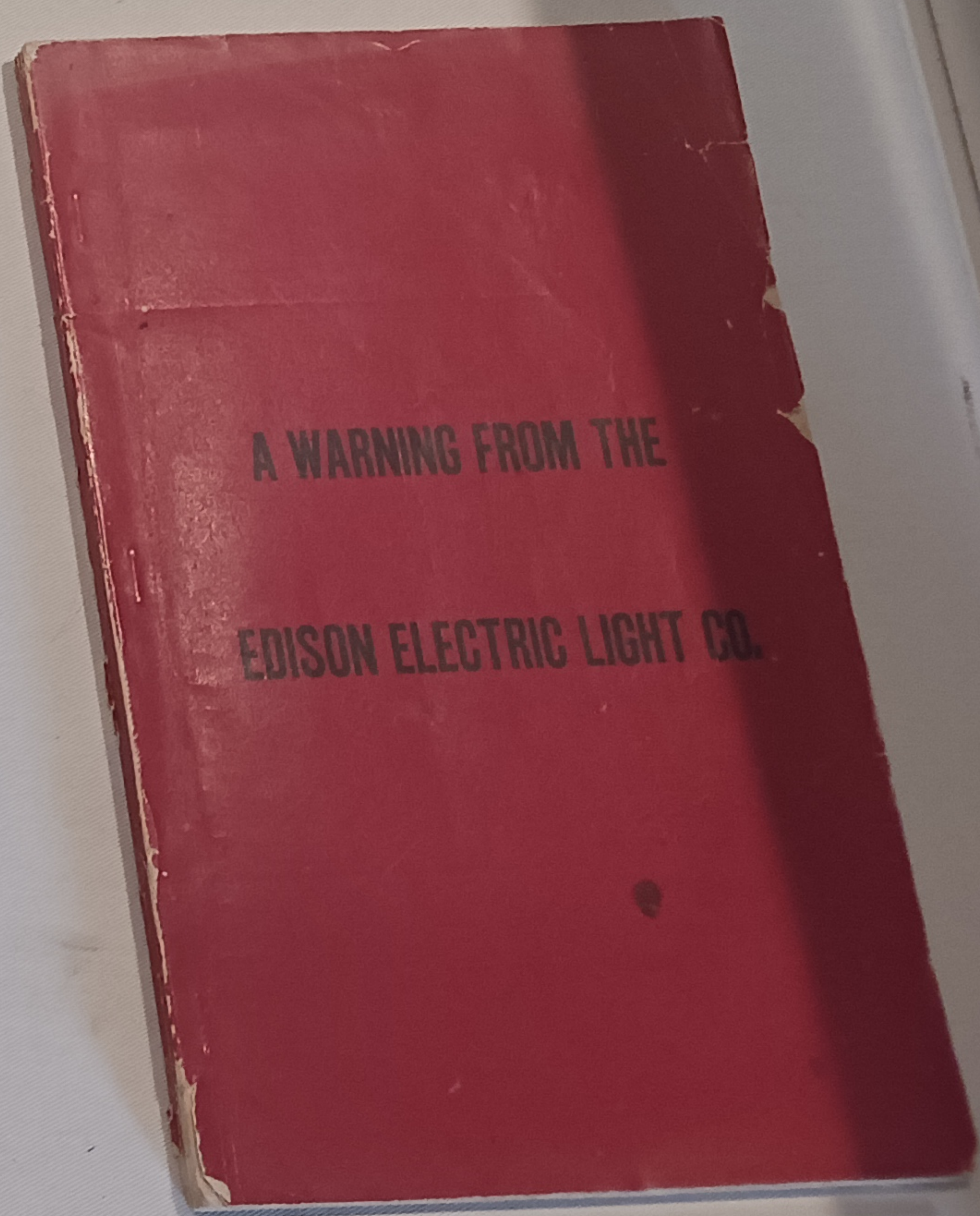
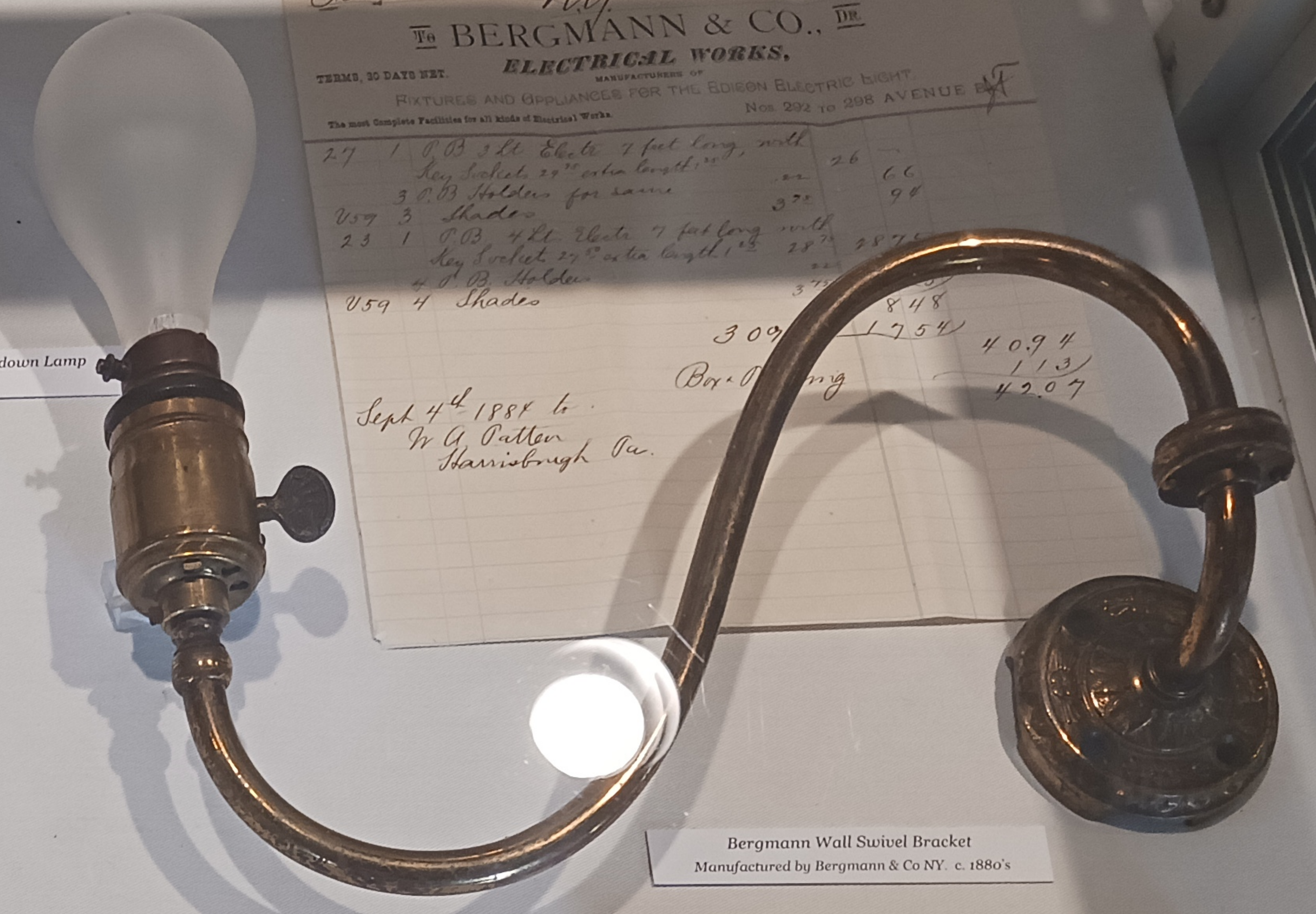
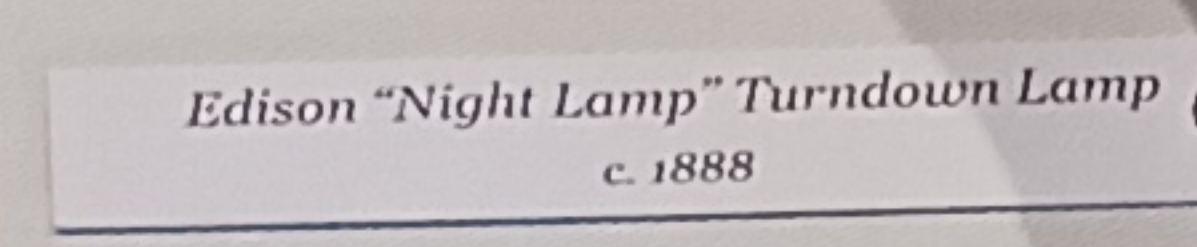
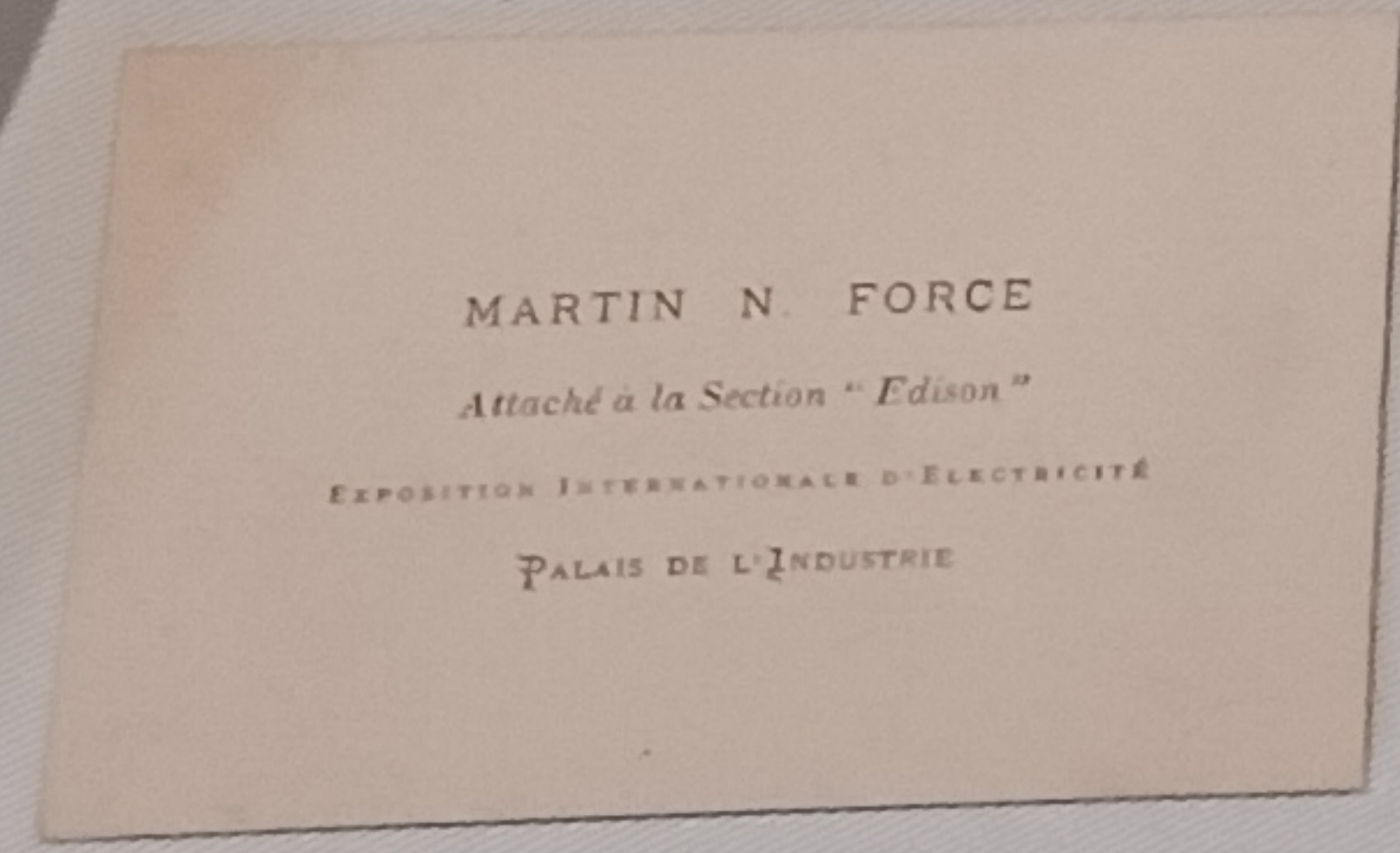
Alessandro Cruto
Italy c. Mid 1880's



as Edison to John Ott and Martin Force
tent filament attachment techniques.
April 7 1883
ce: The Ward Harris Collection

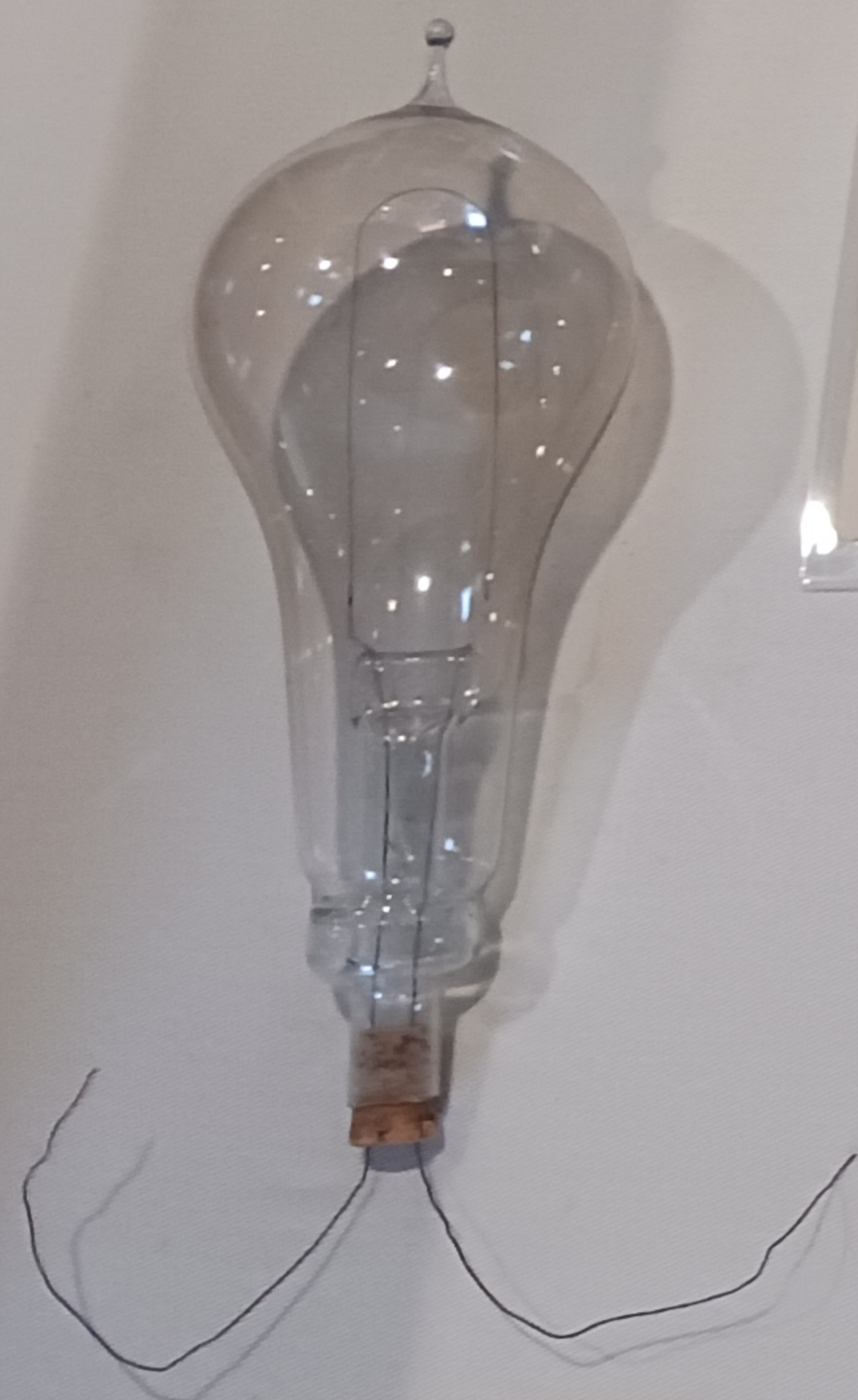
Original steam engine indicator card (along with other indicator tests) from the
4pm Sept 4, 1889, first starting of the Pearl Street Station
New York, NY, first central station for incandescent lighting
in the United States.
Provenance: Charles L. Clarke collection

Letter from Thomas Edison to Francis Upton
regarding test lamps from Martin Force





Edison Wood Base 16cp "A" Lamp
c. late 1880



"Experimental" Edison Lamp
c. 1881

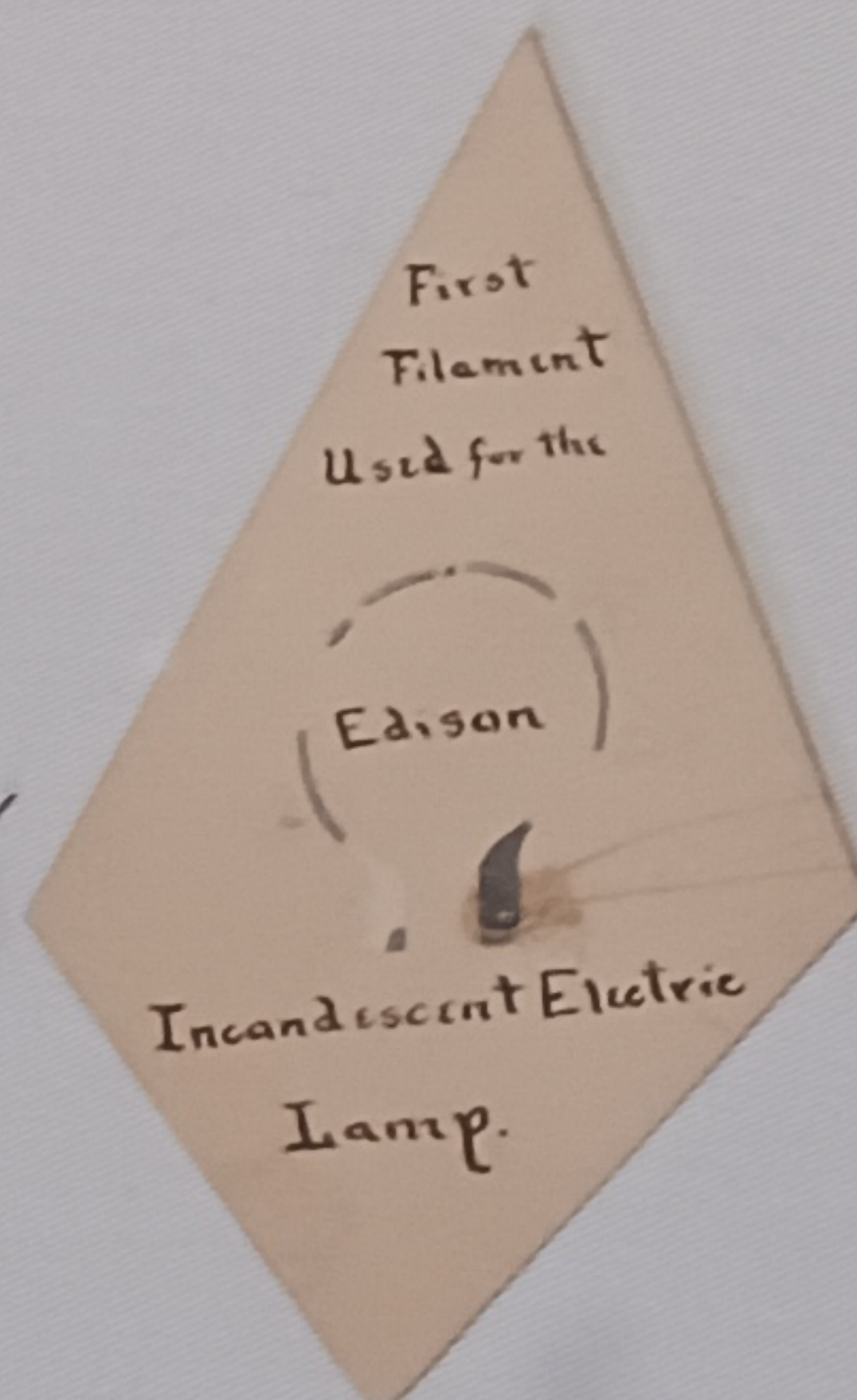
The Edison Electric Light Company,
65 Fifth Avenue.
New York, April 10 1881

Henry B. Parham Esq.

Dear Sir,

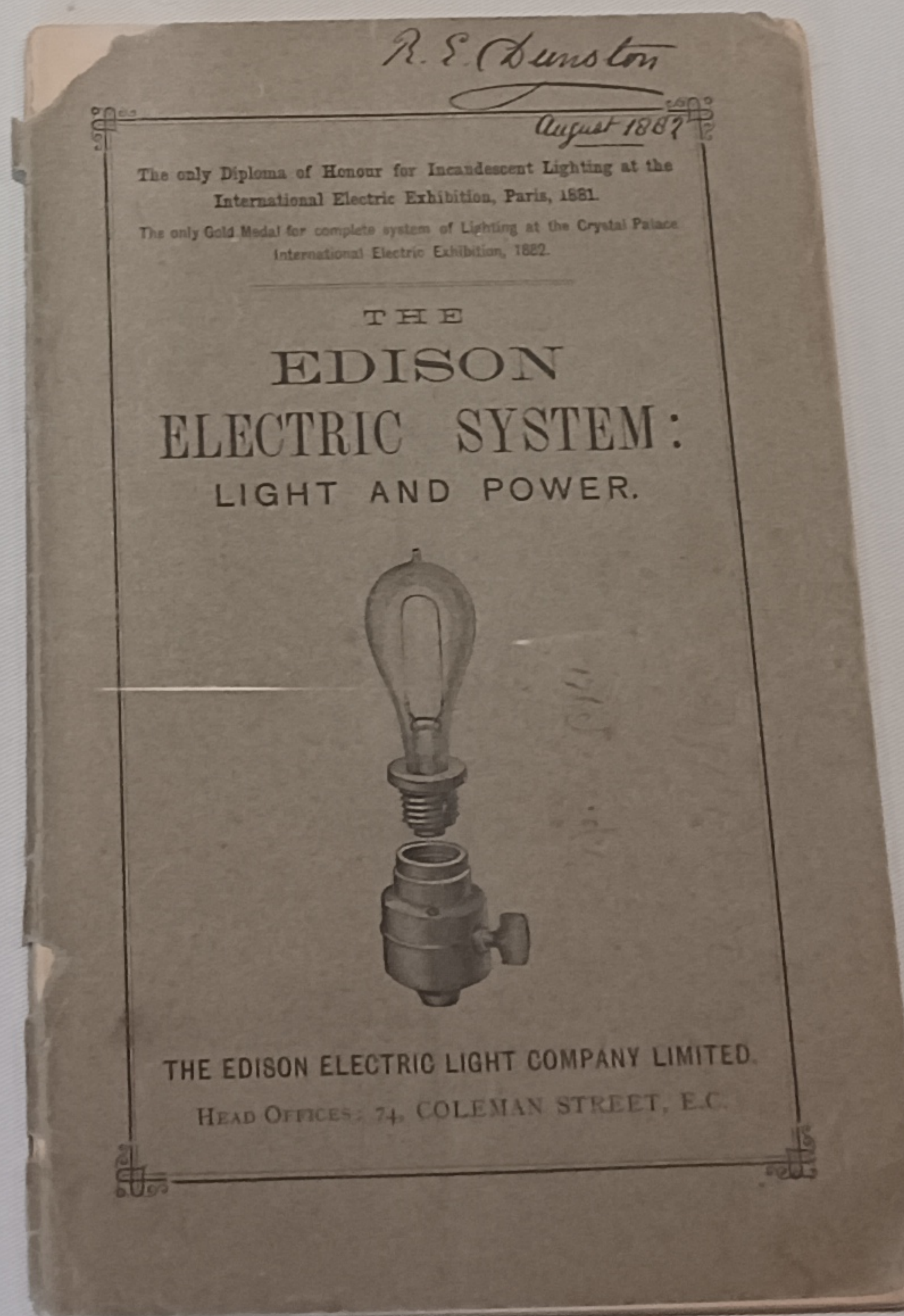
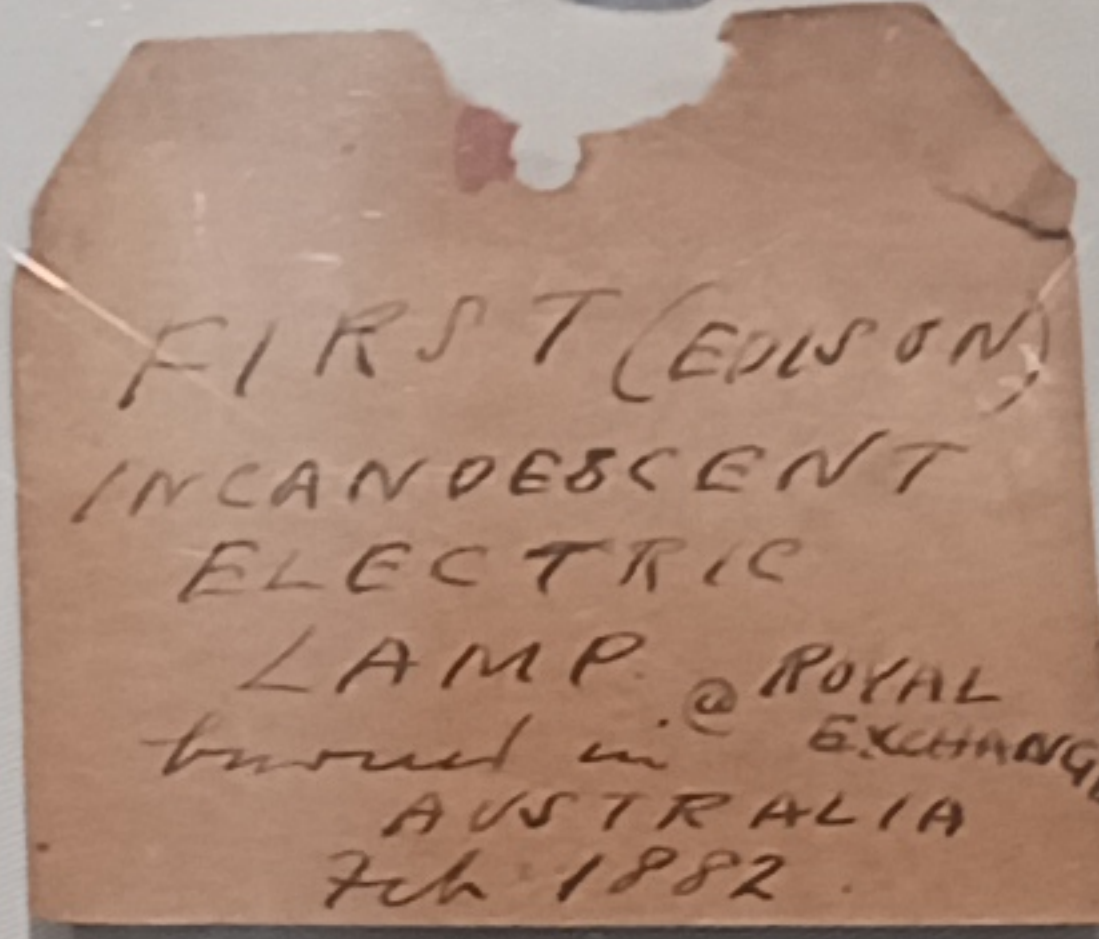
I find in my copy of the Gas Trust investigation that you have copies of the Mutual Books of New York. As I am about to give Mr Kennedy a chance to show how cheap he can make gas, by entering into competition with the Electric Light, I am very naturally desirous of ascertaining the Mutuals weak point if any, and the bottom cost of supplying gas. Could you & would you give me the data, When you come to New York please drop in and see me

Yours Truly
Thomas A Edison



Early Edison "Long Waisted Mary-Anne" dynamo builders plate.
c. 1881

Surviving lamp from the first demonstration of Edison electric light in Australia, Feb 1882



English 1882 Edison System Brochure
Provenance: The Ward Harris Collection



Hydrofluoric acid until it parchments
also by all kinds experiments on
putting paper on ends & parchments.

Try clamping some of the fibres without
the end and use a heavy split
tube to fasten,

April 7 1883

Lab note from Thomas Edison to John Ott and Martin Force
Regarding experimental filament attachment techniques.
April 7 1883
Provenance: The Ward Harris Collection

From the Laboratory
Thomas A Edison
Subject: Orange, N.J.

Upton -

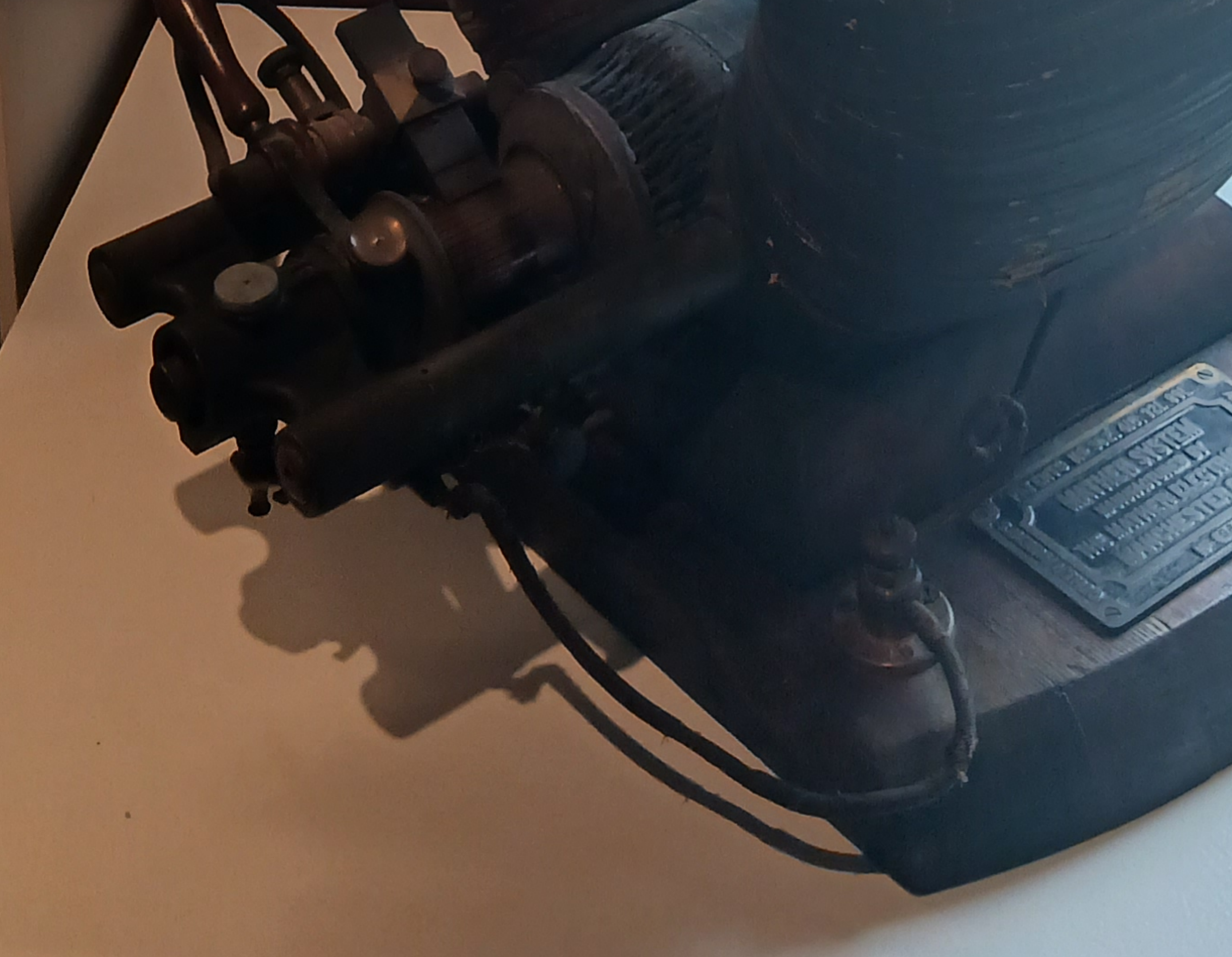
On looking at filaments
from Martin Under microscope
it looks as if dipping solution
was too thin. They do not get
on as much as they once
did - Hot weather also.
Thin solution, I think if
they increase the density
as much as they can
work they will get much
better results.

Edison

Letter from Thomas Edison to Francis Upton
regarding test lamps from Martin Force

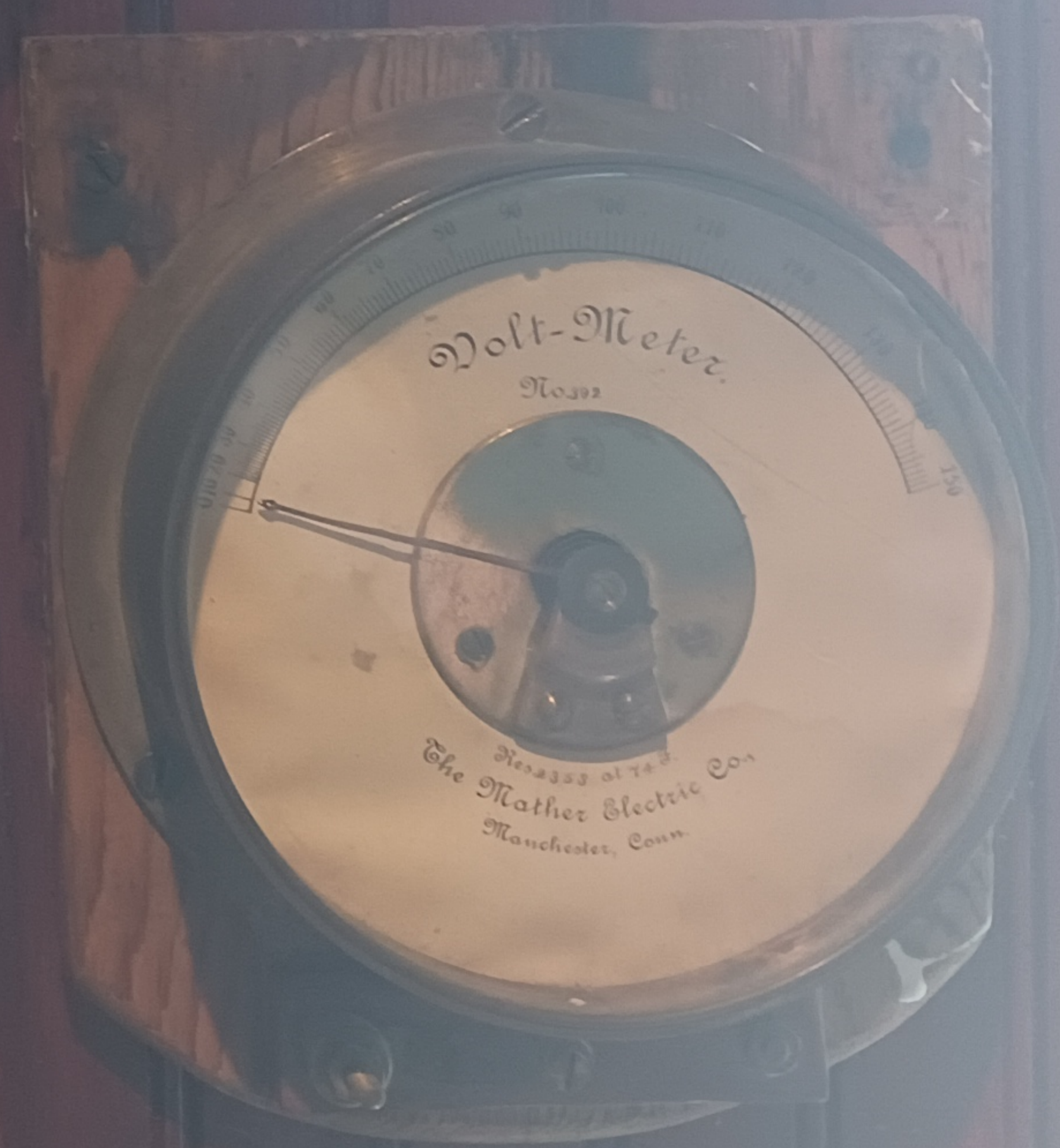








The Mather Electric Co.
Factory Manchester, Conn.
Principal Office 111 Bedford St.
Boston.
Pres. H. G. Cheney Genl. Mgr. Daniel L. Chapin
Electrician W. A. Anthony Asst. Treas. W. M. Kimball
Q.V.V.



The Mather Electric Co.
General Instructions for
OPERATING THE DYNAMO.

The Dynamo should be placed in a dry, clean place and kept free from dust and dirt. Use a limpid oil free from grit and let it FLOW FREELY through the bearings. When drawn from the drip cup it should be nearly as clean as before it was used. Strain and use over and over.

If the bearing run hot, remove the yokes and scrape the journal boxes. Don't use emery in any form.

Keep the channels to the drip cups clear. If the oil is allowed to overflow and soak the commutator or armature wires it may cause a burn out.

Keep the commutator clean and free from scratches. The best plan is to rub the commutator over occasionally, while running, with a piece of cloth, and if it shows signs of cutting, moisten a piece of clean cloth with a drop of oil and rub over it. Any free oil on the commutator is a source of danger.

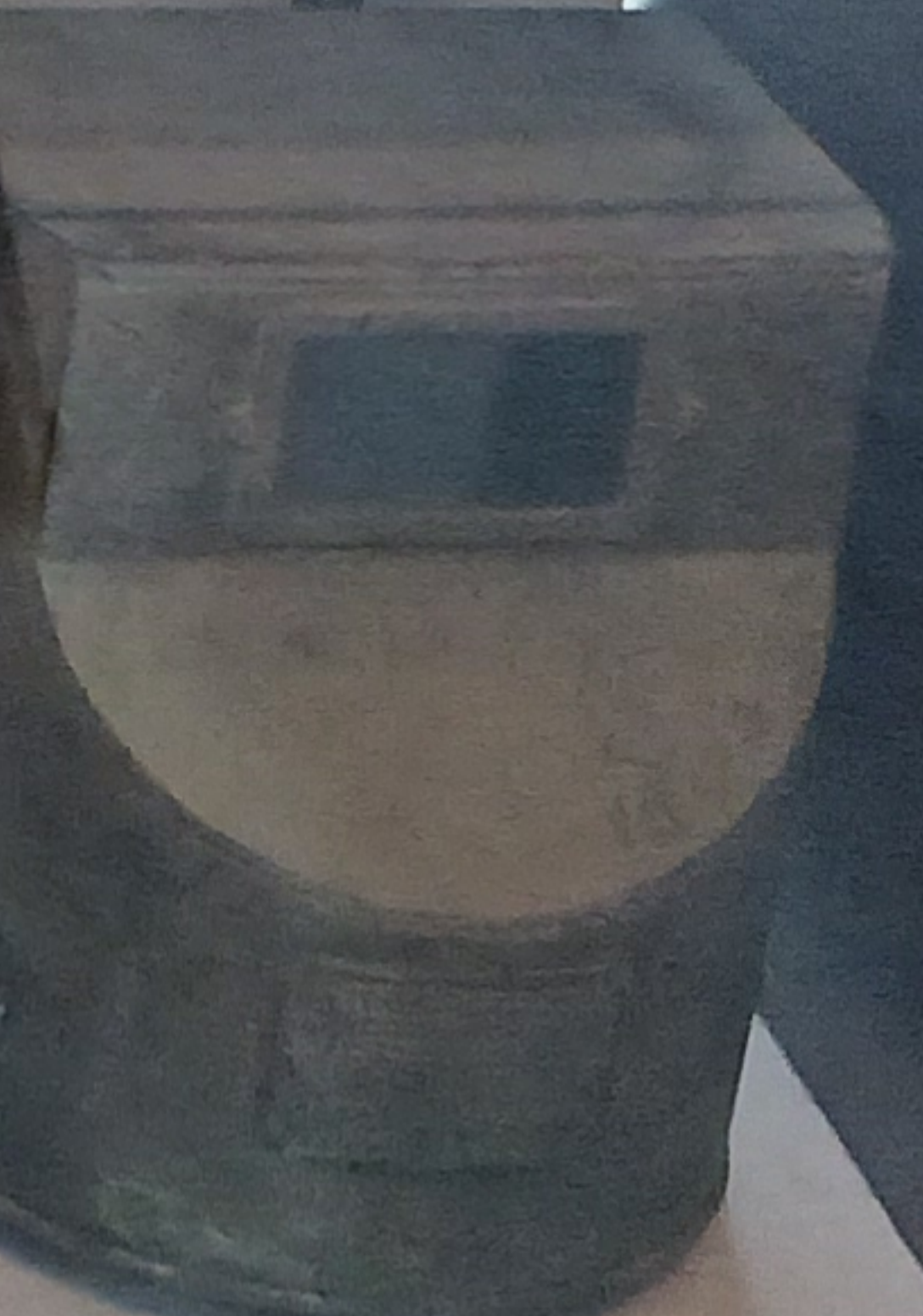
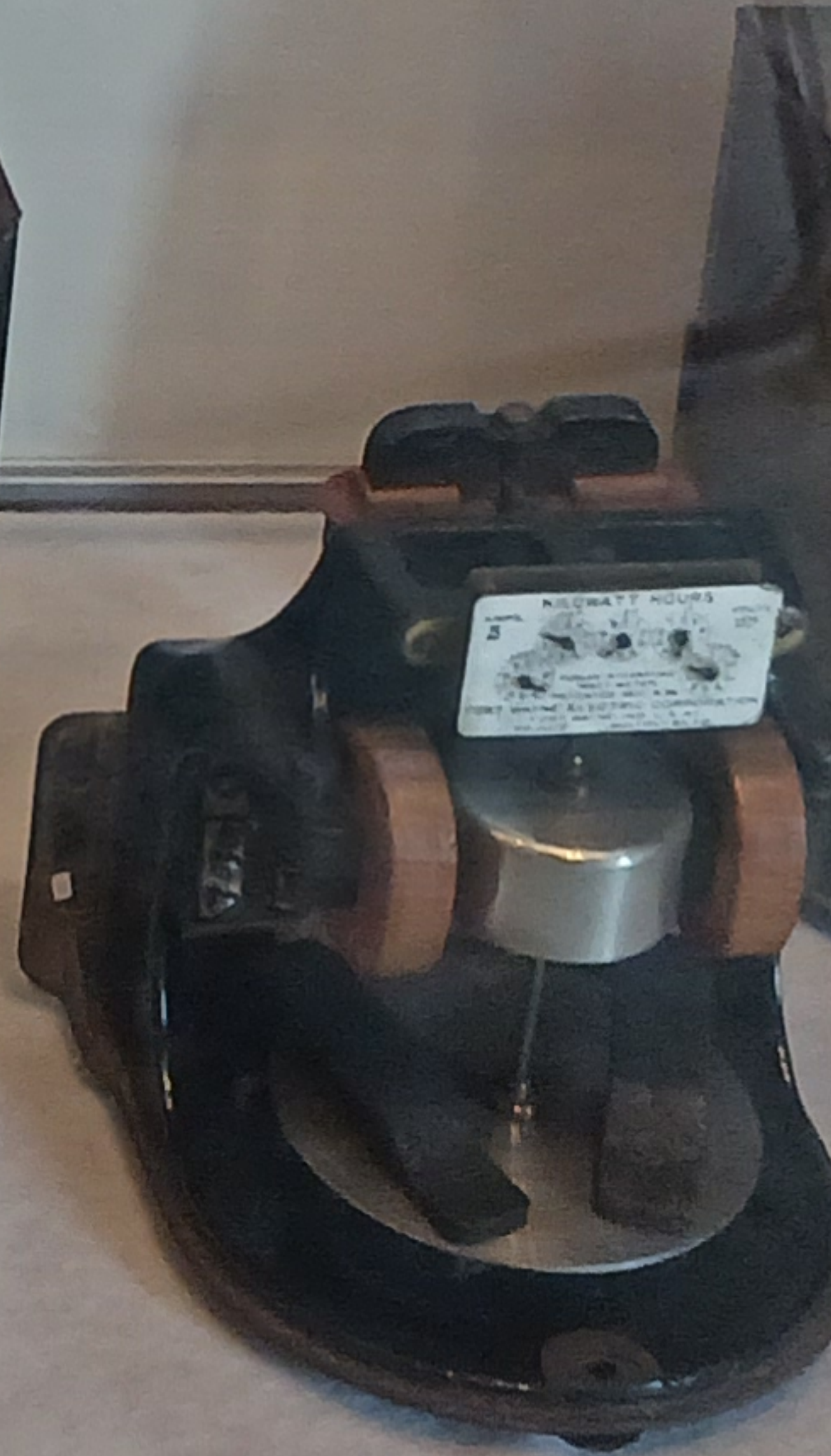
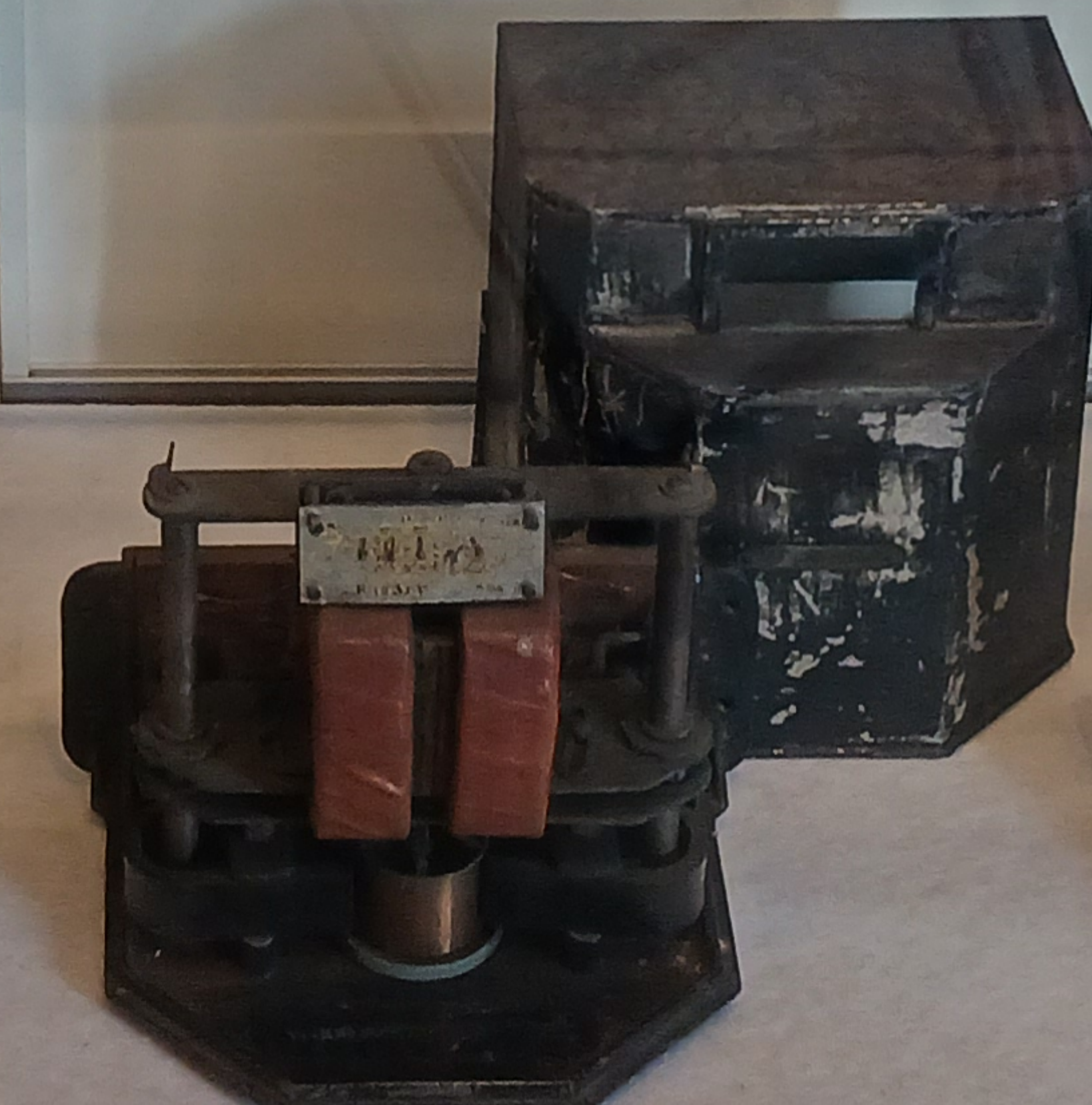
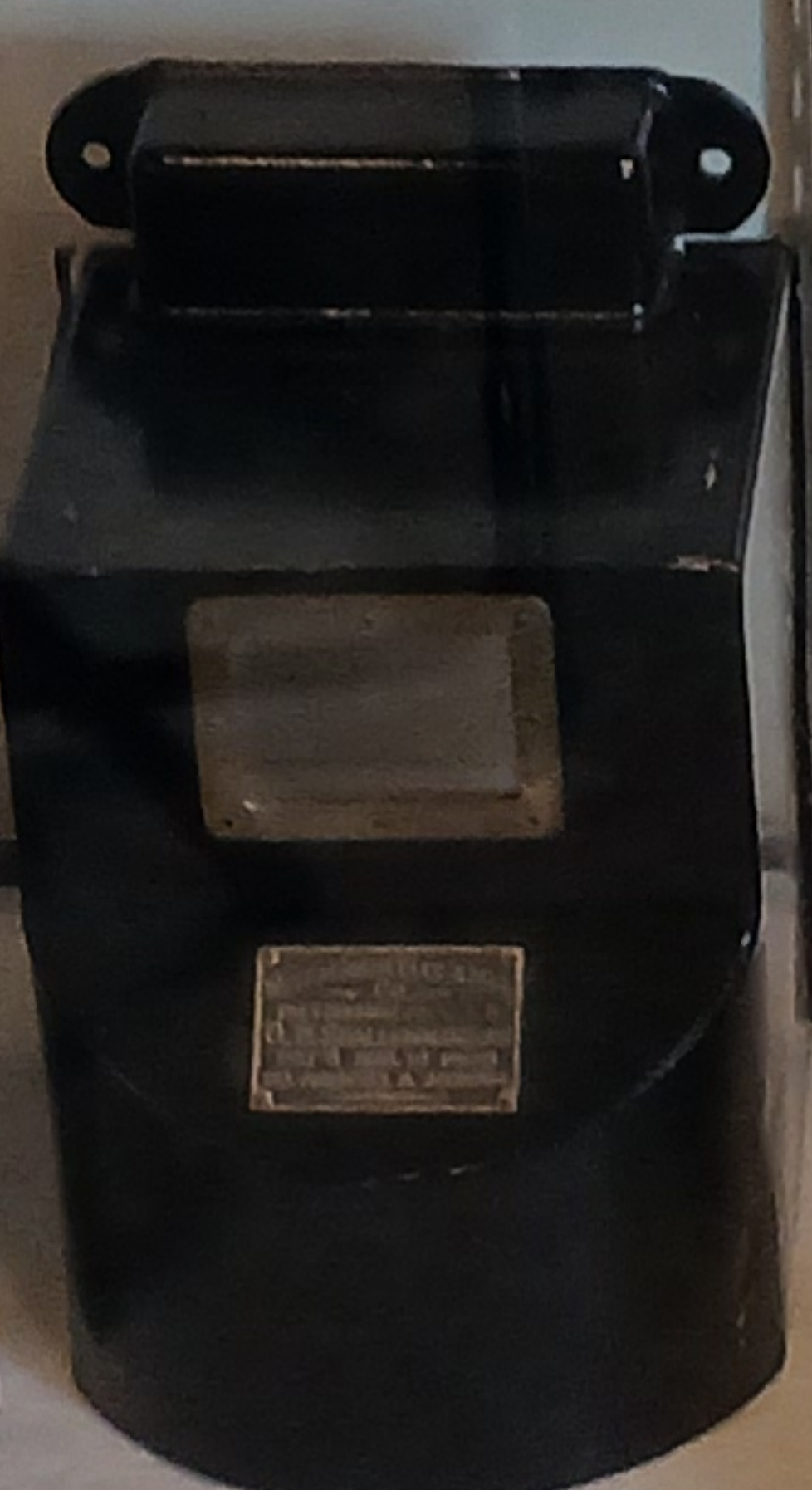
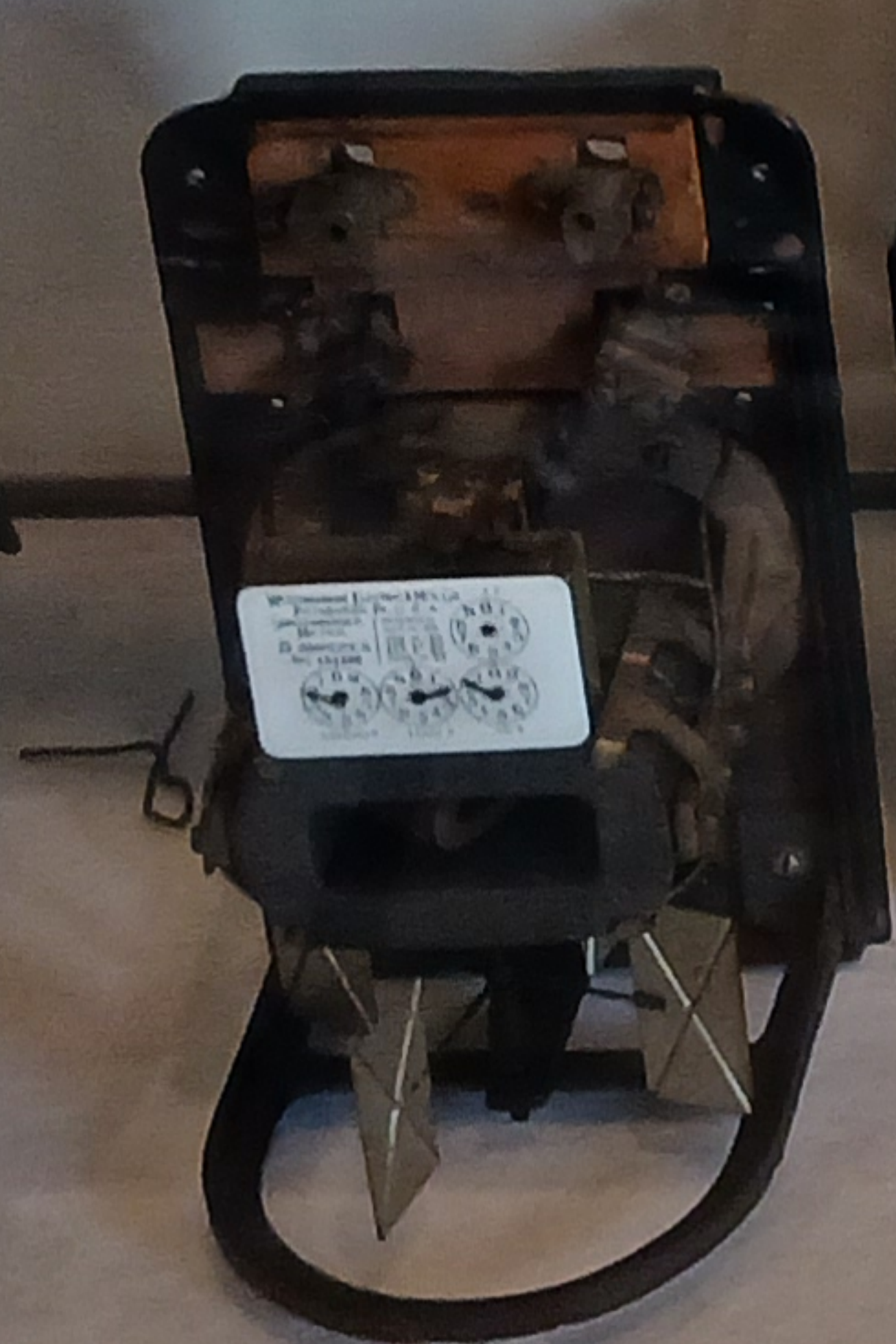
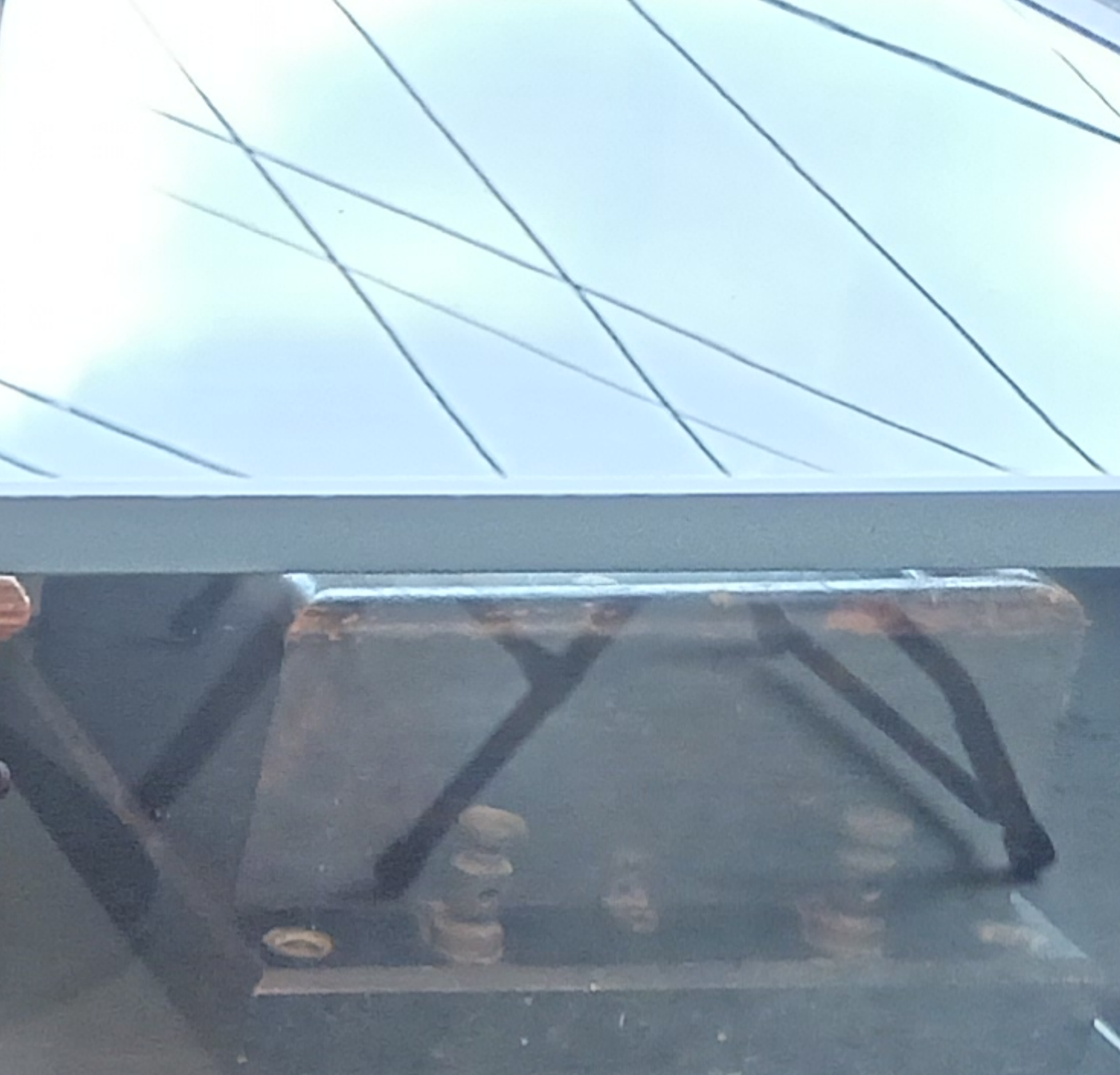
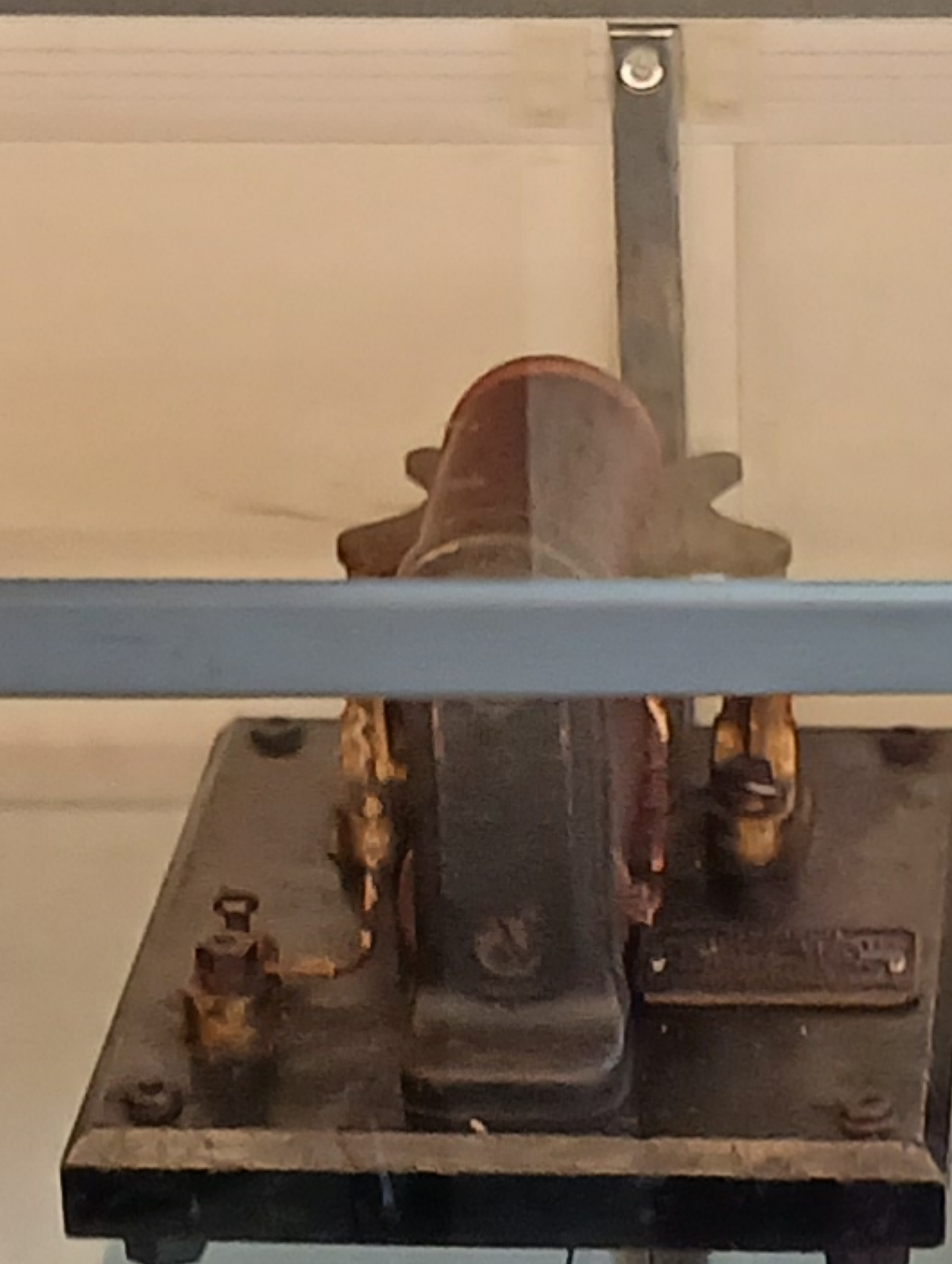
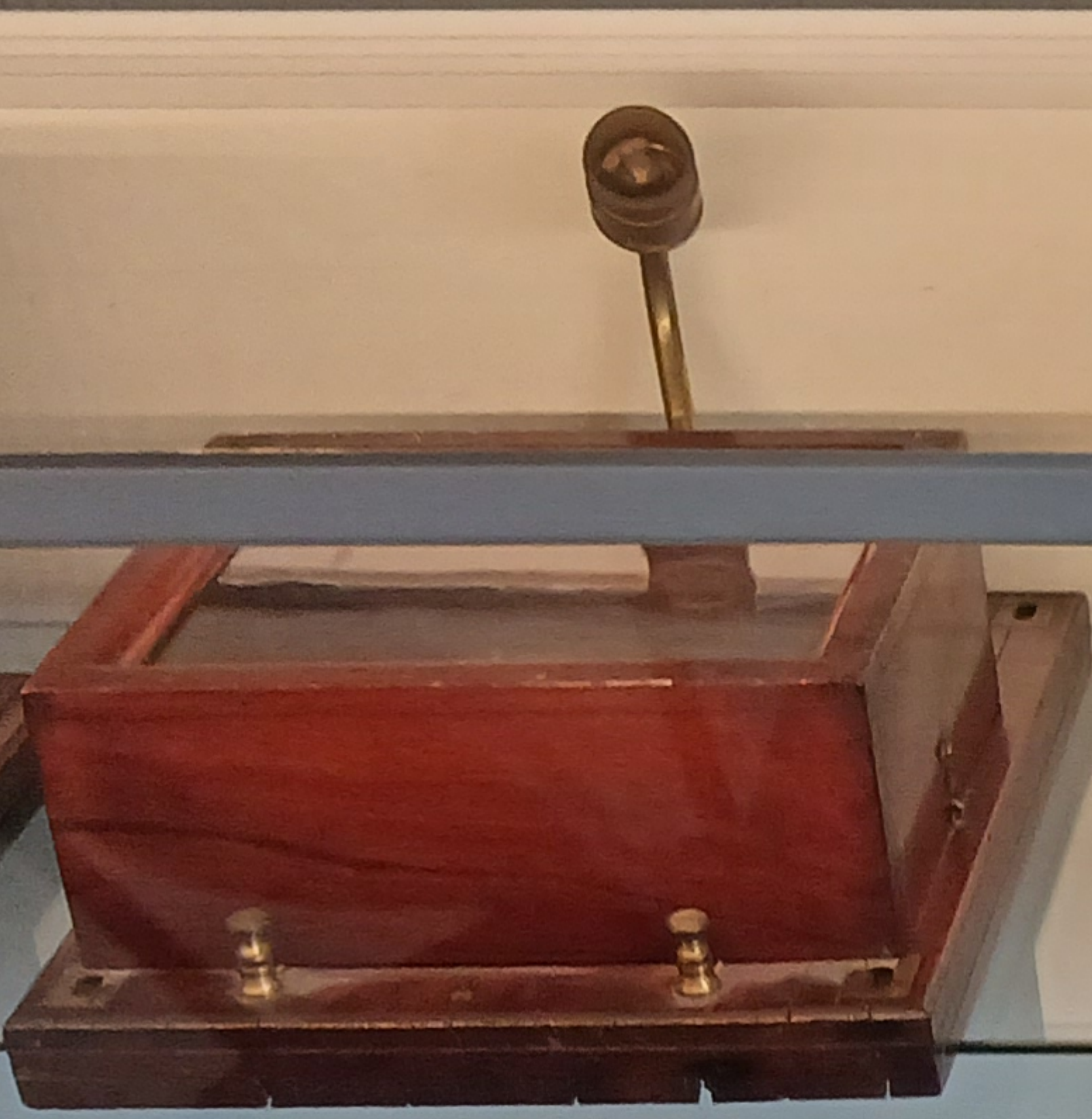
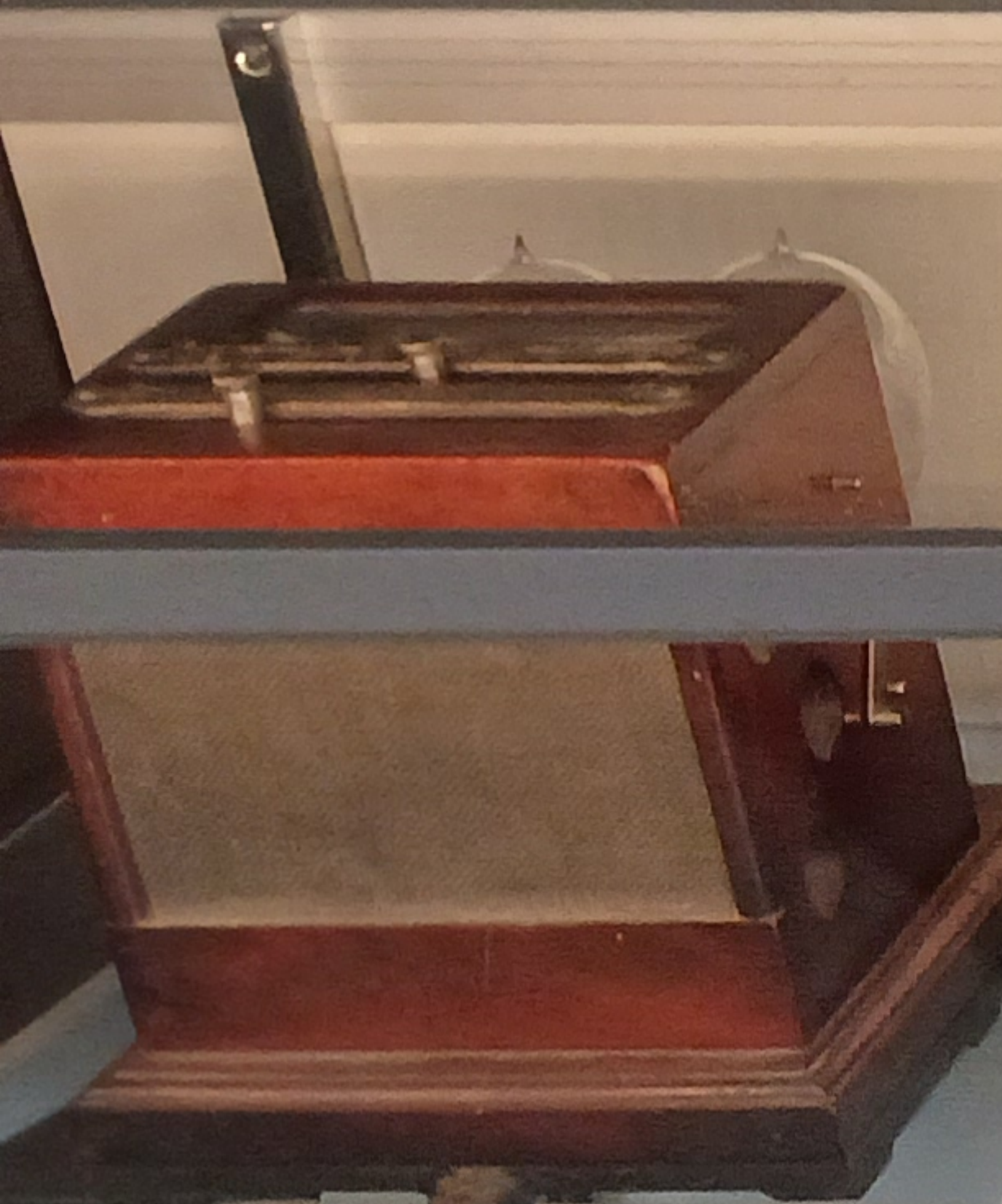
If the commutator should become roughened use 00 sand paper, never emery, to polish it. When the commutator is in proper condition it presents a dark glazed surface which will run day after day without other attention than keeping it clean.

The brushes should be firmly screwed in the brush holders and placed at diametrically opposite points of the commutator, the pressure being only sufficient to insure good contact; never have them press so heavily as to scour or cut the commutator.

If there is any sparking at the brushes, adjust the brush arm, and if necessary the brushes separately. This will need to be done occasionally as long as the machine runs, especially if many lights are turned on or off. The commutator must run without spark or no amount of polishing or cleaning will keep it from cutting. A little attention will save both brushes and commutator. A set of brushes should last for months.



Gift of John Luthgow - 2022







American
Edison
Tubular form storage lamp
filament, copper plated
presented to me by Frank
Genl. Mgr. Edison. Aug
1879

American 1881
Edison
Wire lamp, submerged in water-
filled globe, contacts being made under
water however set up, electrolytic action,
used in Edison Exhibit, Crystal
Palace Elec. Expo. 1882
W.J.H.

Edison
Lamp
No. 1
1879

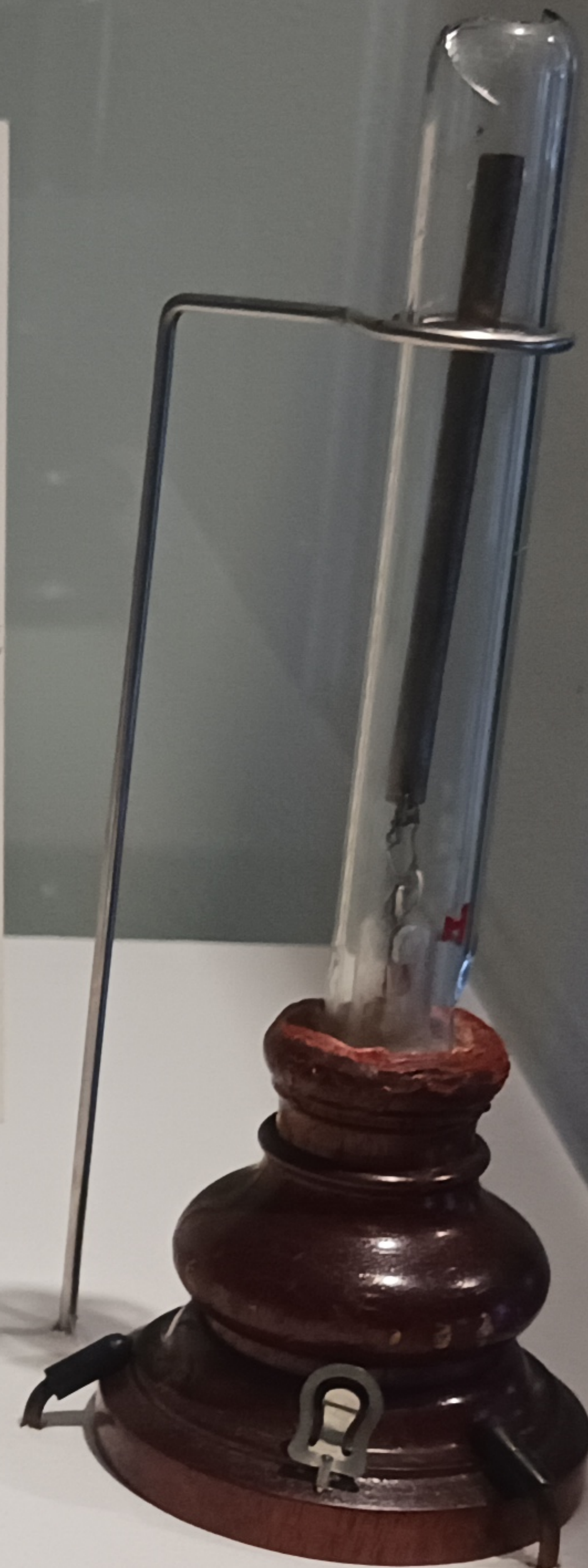
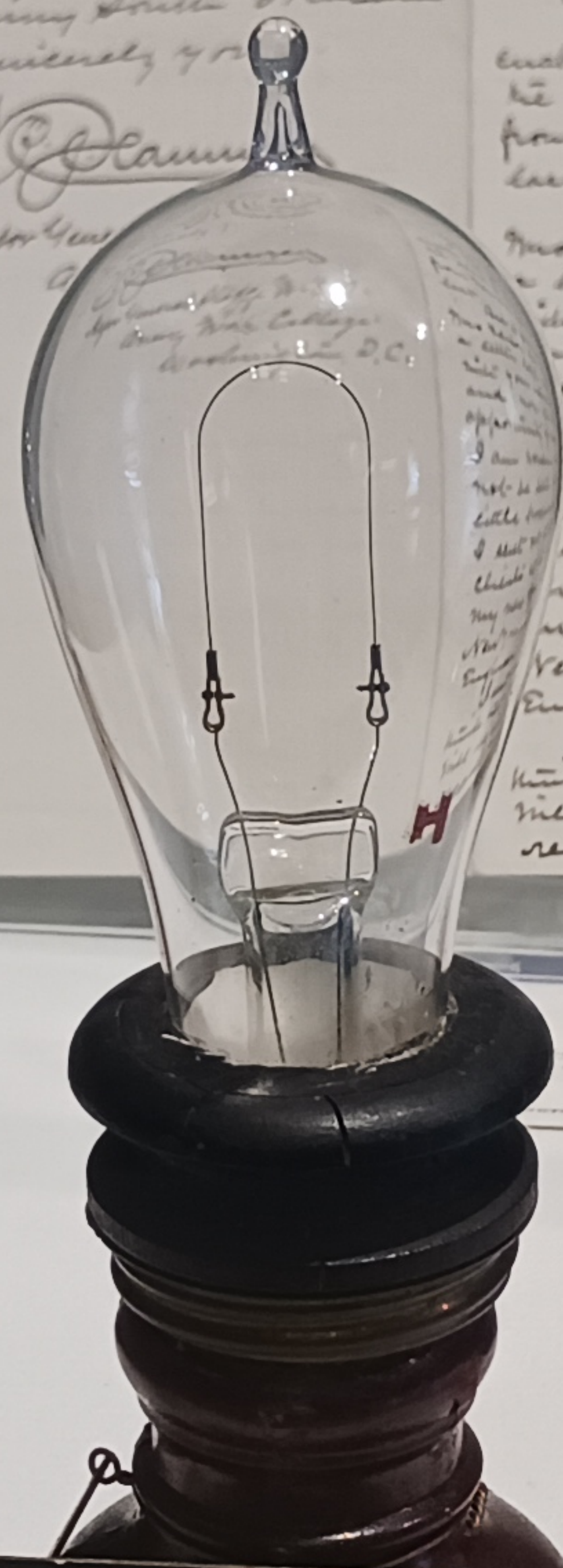


American
Edison
Tubular form storage battery
filament, copper-plated clamps
presented to me by Francis
West. Mgr. Schenck. Lamp 11.

157

American 1881
Edison
Mine lamp, submerged in water-
filled globe, contacts being made under
water however set up, electrolytic action,
used in Edison Exhibit. Crystal
Palace Elec. Expo. 1882.
W. J. H.

17



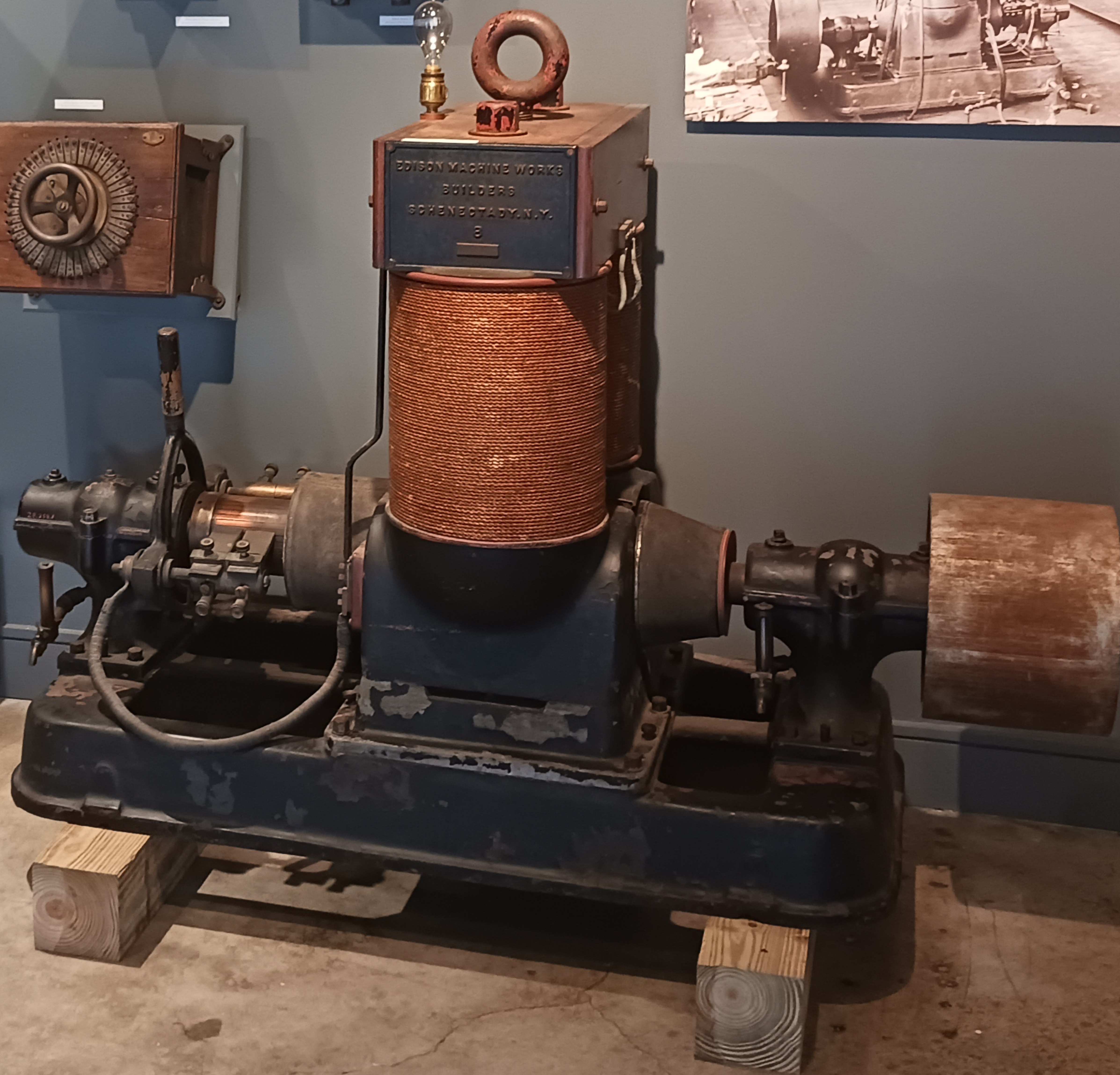
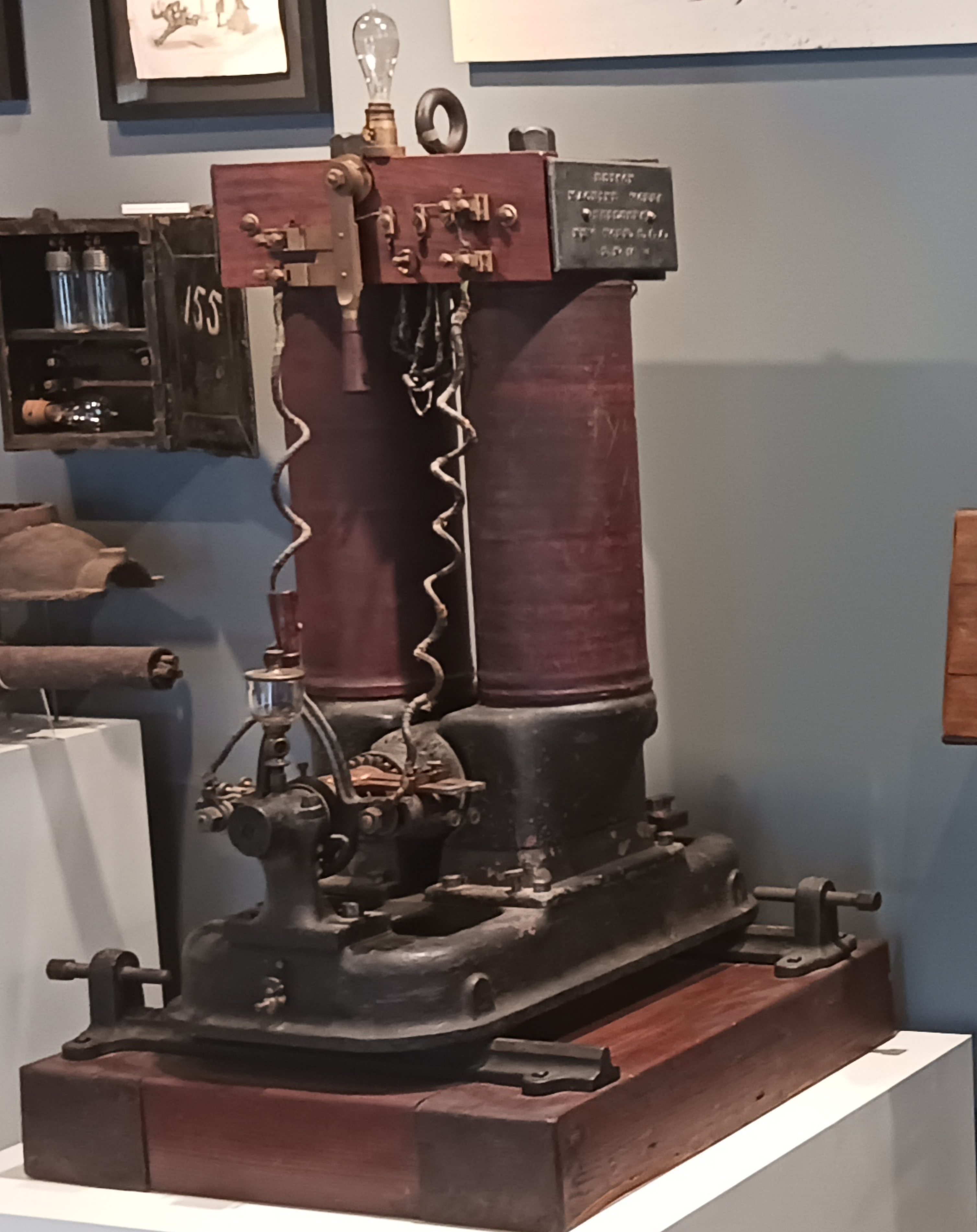
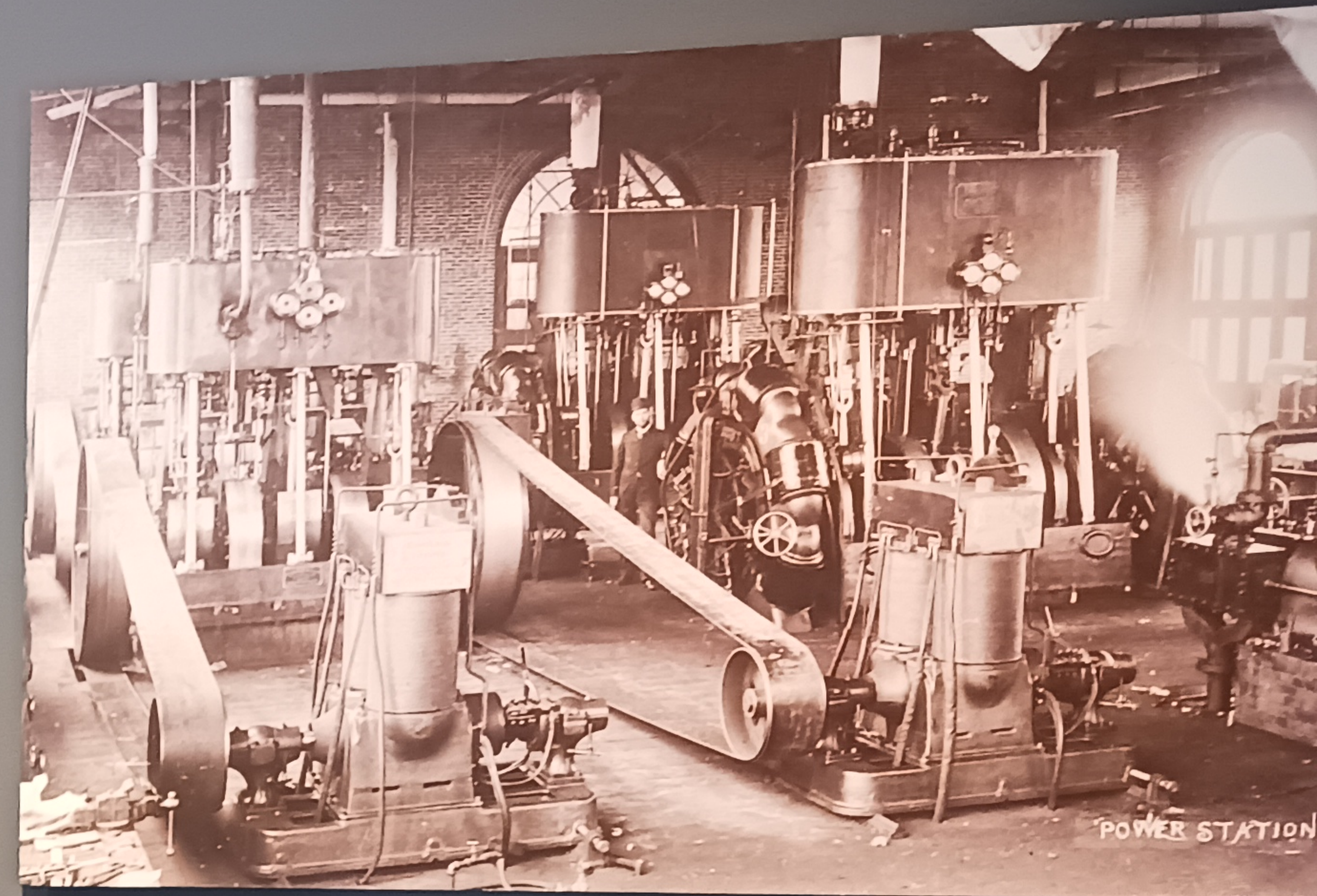
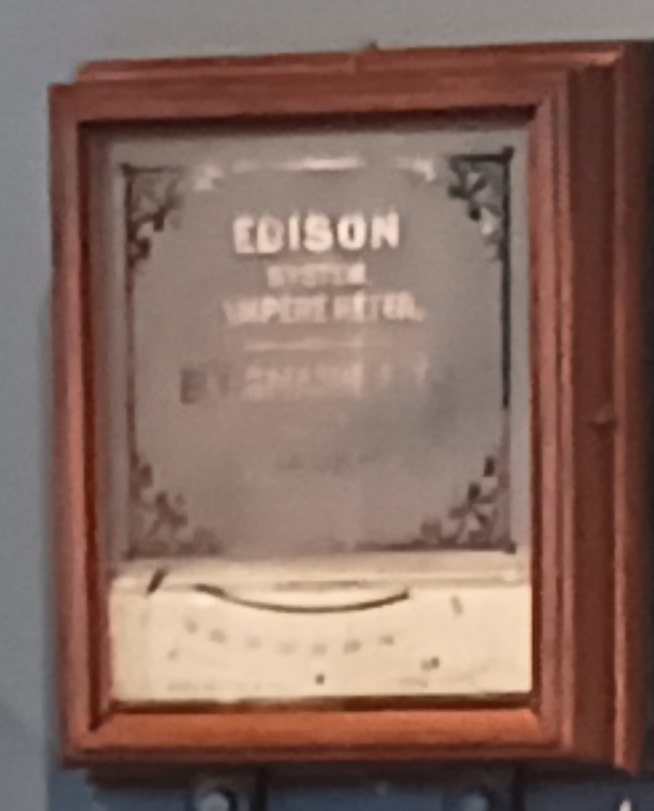
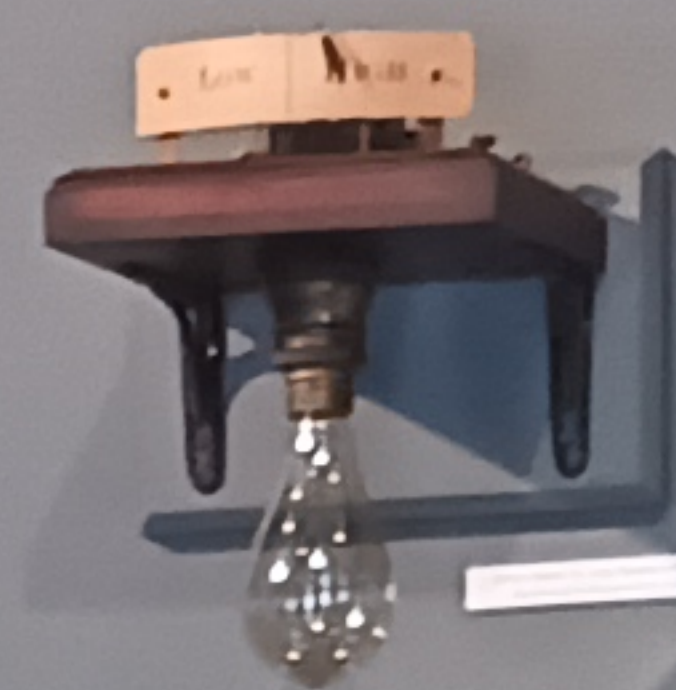
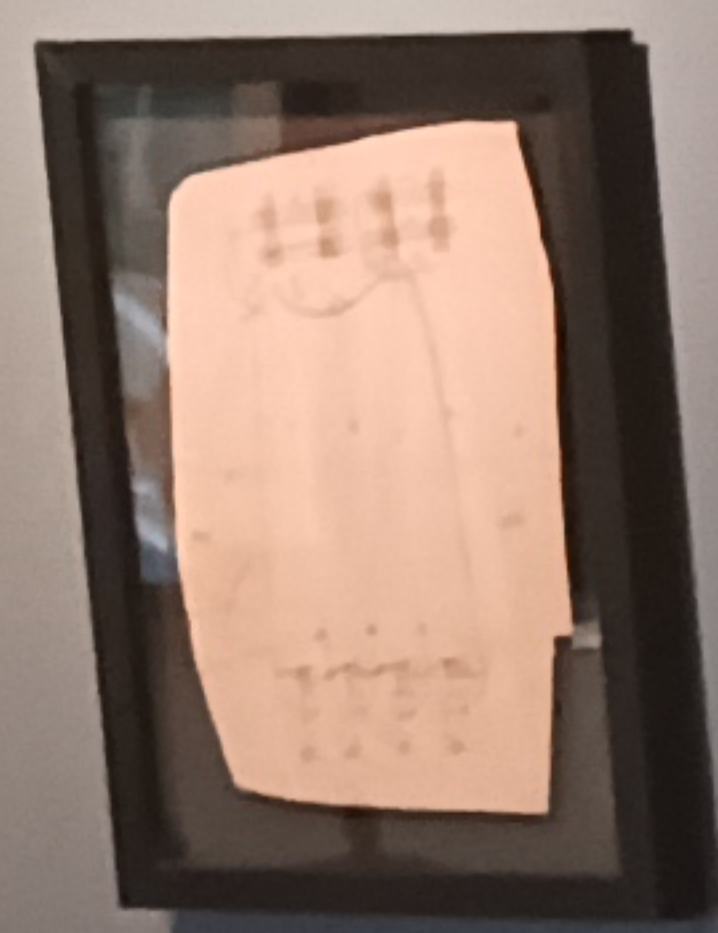
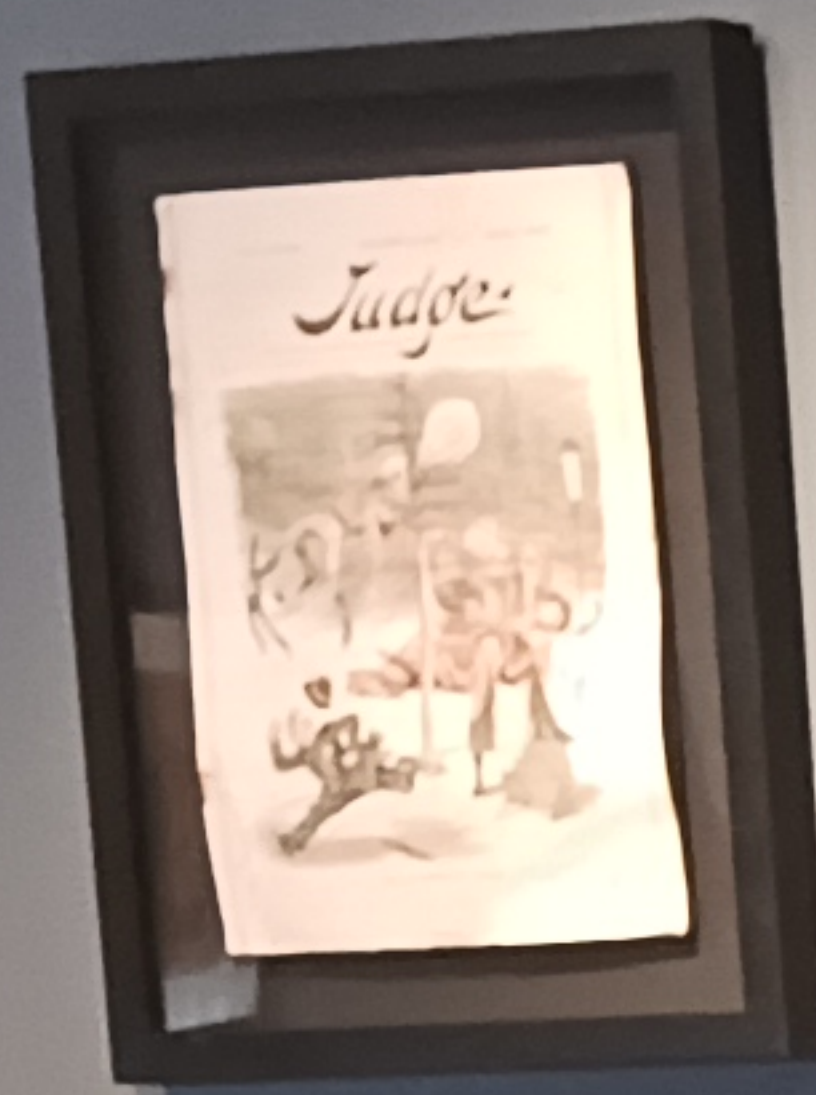
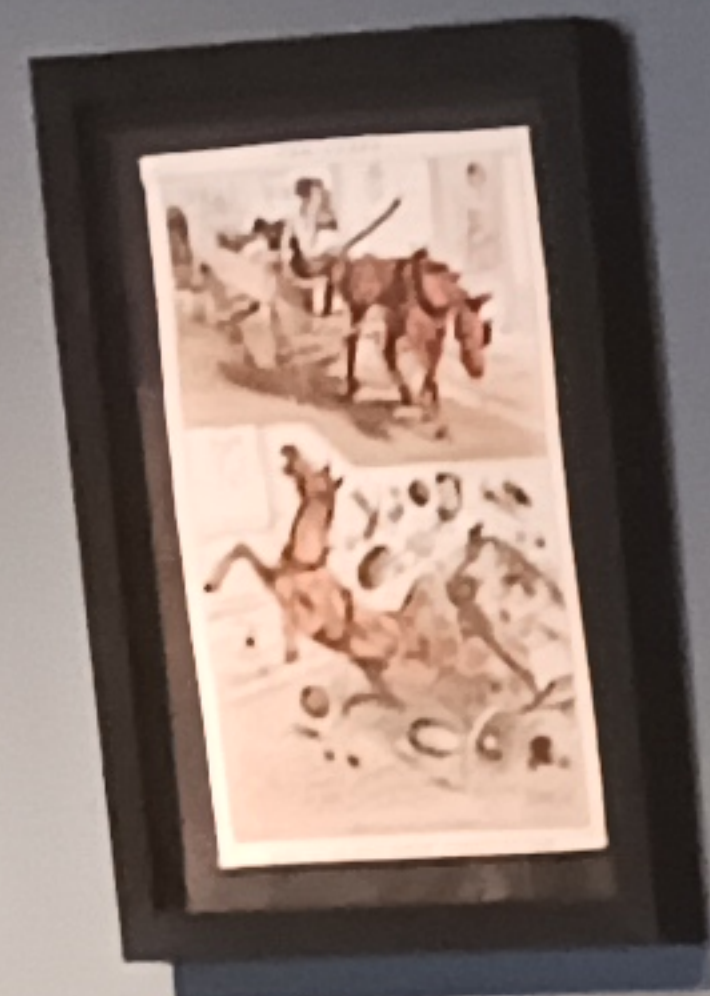
My highly
Trusting that this finds you
all Mrs. Edison, Charles, Miss
Mabel and Theodore all well &
hoping your stay in Florida
and that you may all return
home hereafter in your
own comfortable home -
Very sincerely,
O. S. Sponner
Apr 4/99

WAR DEPARTMENT
OFFICE OF THE CHIEF OF STAFF
WAR PLANS DIVISION
WASHINGTON
Feb. 18th 1919.

My dear Mr. Edison:
I was not advised in time to
enable me to prepare a letter that
he sent to you on your departure
from New York for Florida on Feb 10th
last.
But I promised myself and
Mrs. Edison that I would send you
a letter before starting my Commission
to your interests here and abroad
and now that I have my first
experience of keeping my promise
am wondering whether it would
be better to enclose the
the brochures and card which
sent out to a few prospective
clients at the time I secured
my new office at 55 Liberty Street
New York as a Consulting Electrical
Engineer.
I sent out my first of these
which that yourself and family
will be interested in this my
record which was taken from

Note - This lamp was made and
used before a means of fastening the
carbonized bamboo filament to the
platinum lead in wires had been
found - hence the platinum wire
clamps and screws that were used
to securely hold the filament. These
lamps had a very brief life. A
"lamp boy" was on duty to replace the

American 1880
Edison
"B" or 8 c.p. carbonized bamboo
filament in platinum vice
clamps, pressed (Kolzer)
inside seal, early wooden
screw base. Presented to me
by Mr. Francis R. Upton, at
Menlo Park, N.J. 1880
W. J. H.



STEMPLER

BISBEE

SALT & VINE

MURPHY/PEARSON

BASECAMP

PREWIRE
MASTER SUITE

FINAL

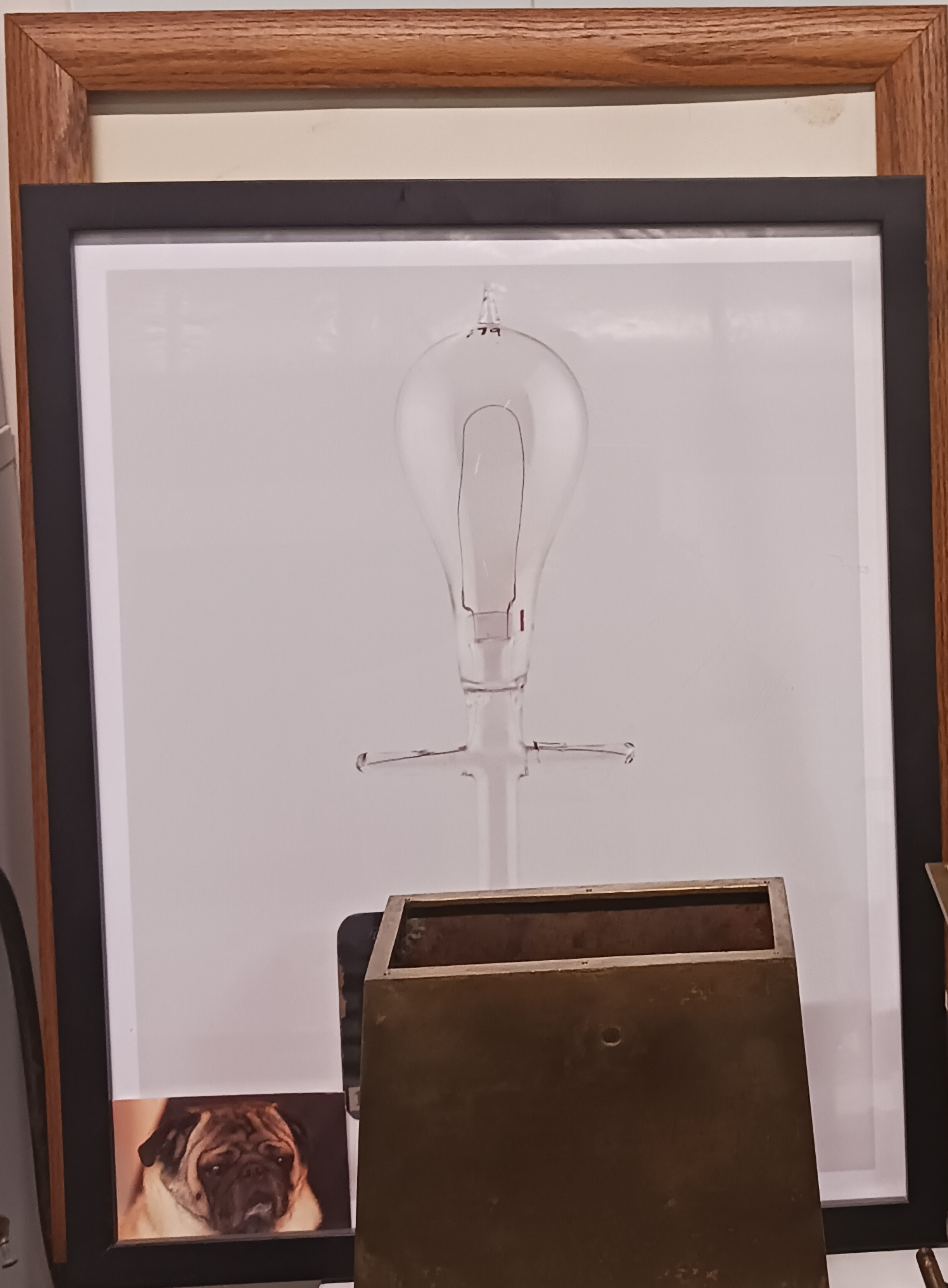
HOLD

THEATER

PREWIRE

FINISHED

PREWIRE











STARR

STARR
1880-1881
1882-1883
1884-1885
1886-1887
1888-1889
1890-1891
1892-1893
1894-1895
1896-1897
1898-1899
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2018-2019
2020-2021
2022-2023
2024-2025

BASECAMP

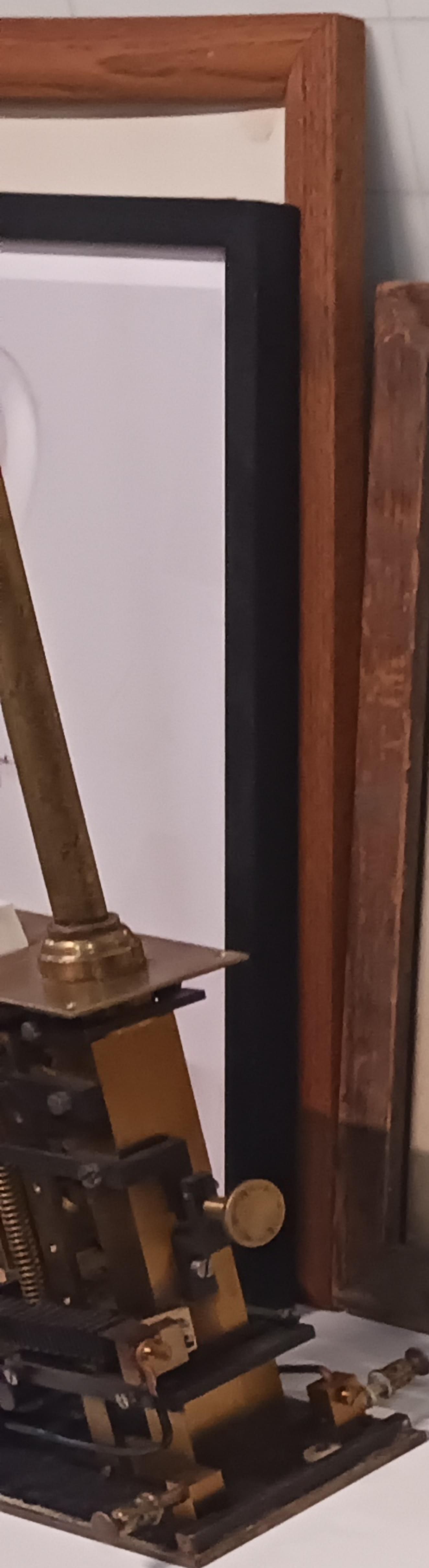
SR
RL

THEATER

TW
SK

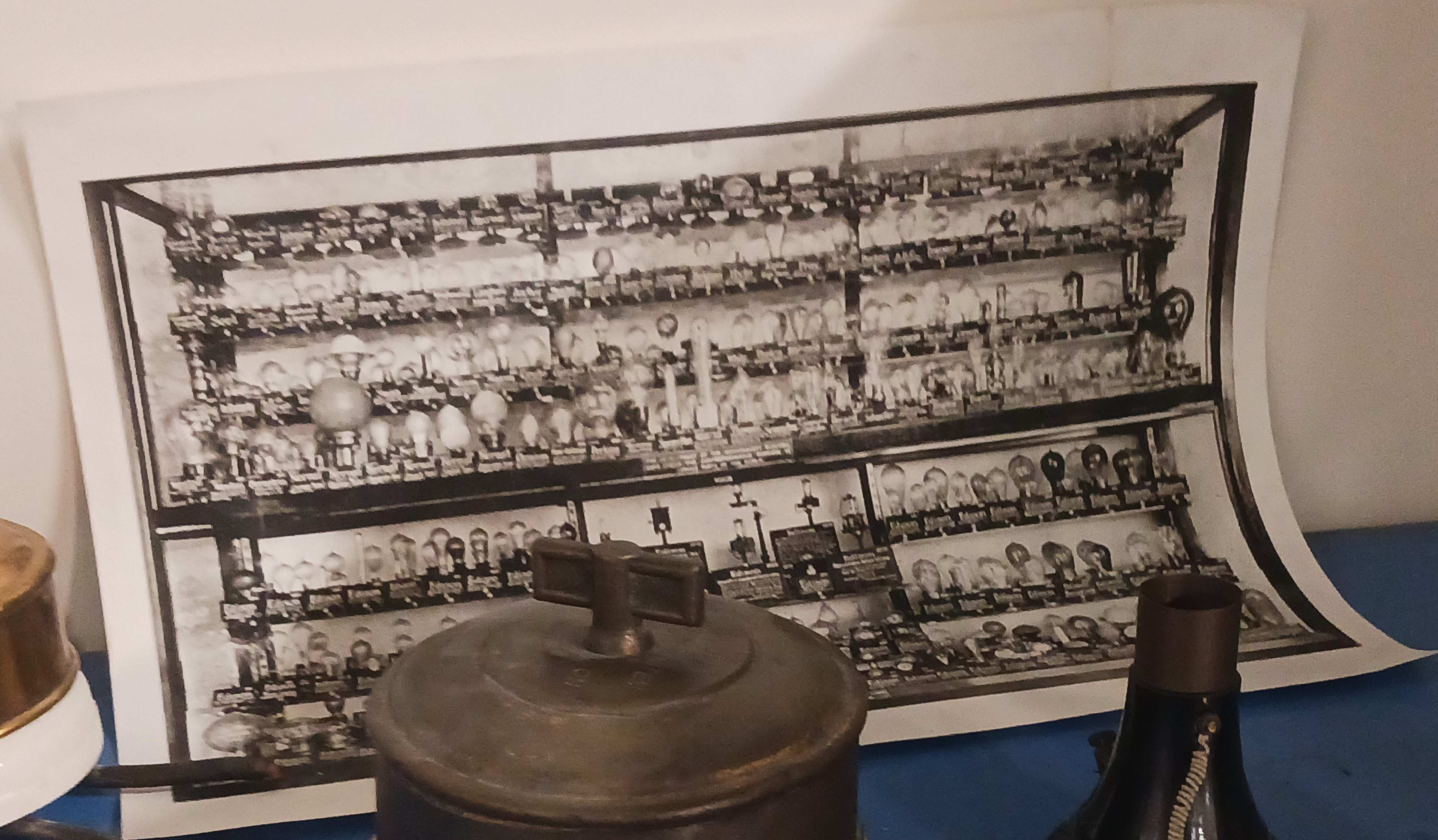
PREWIRE
FINISHED
PREWIRE

TW
SK

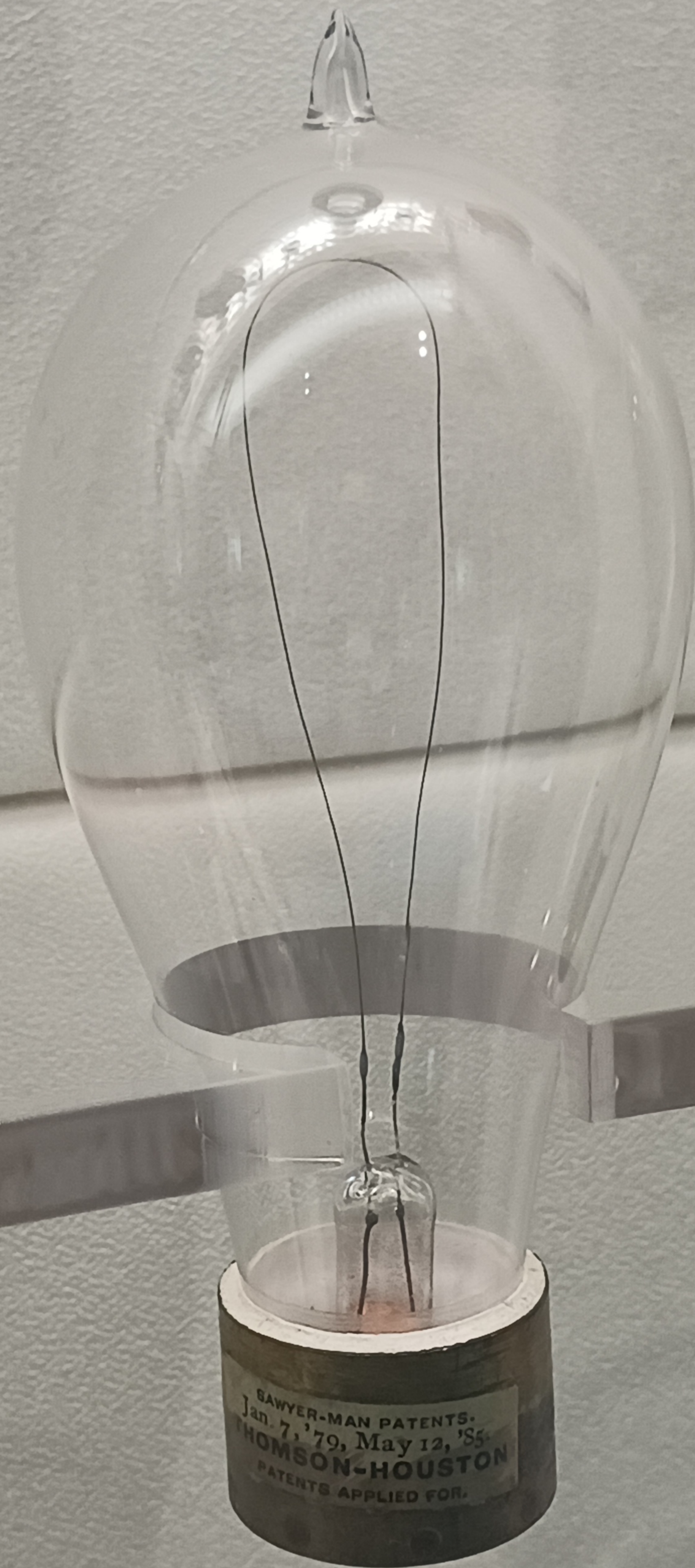


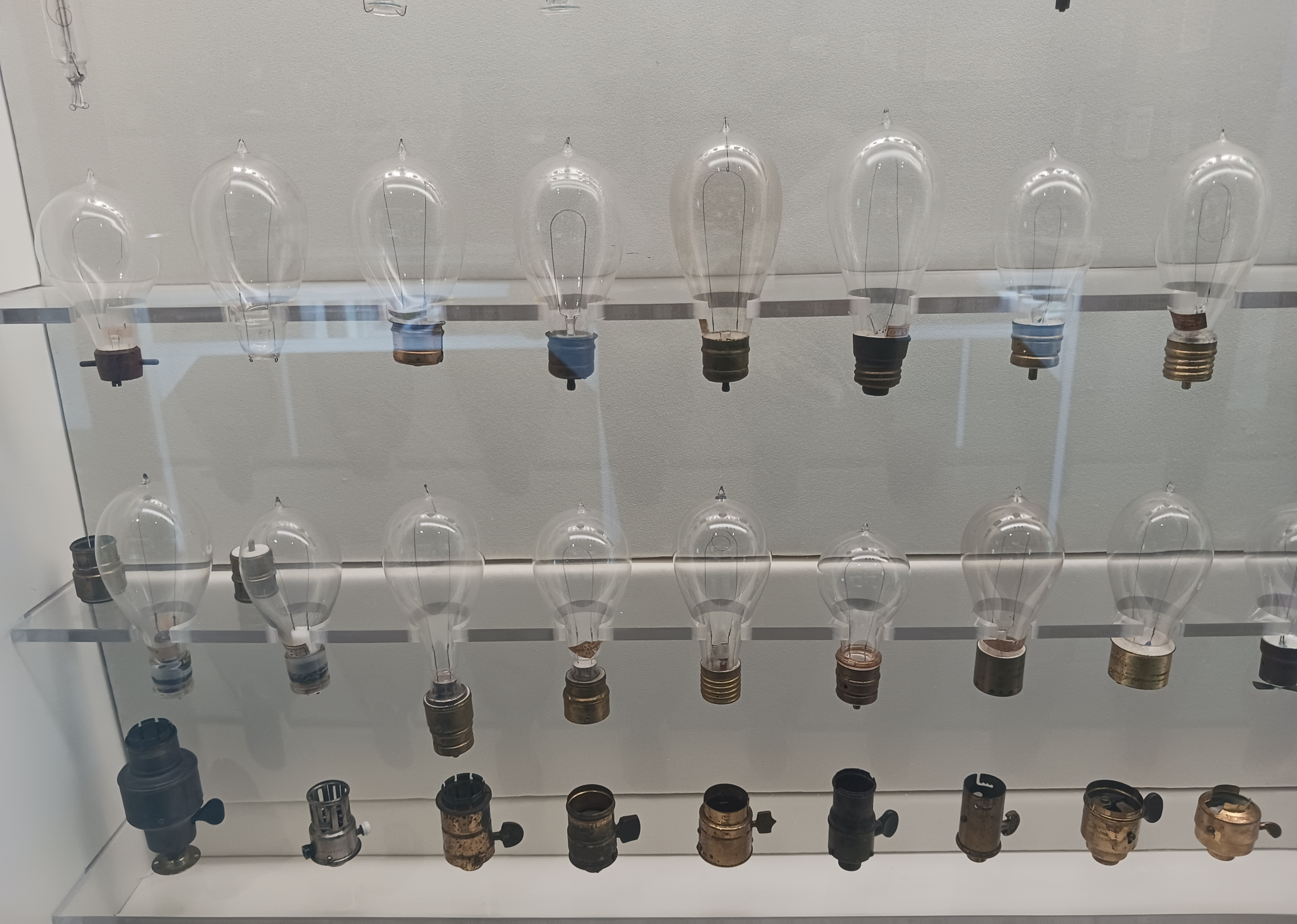


Bergmann No. 120 Portable Electric
Manufactured by Bergmann & Co.









TA-RA-RA-BOOM-TAR-AH!



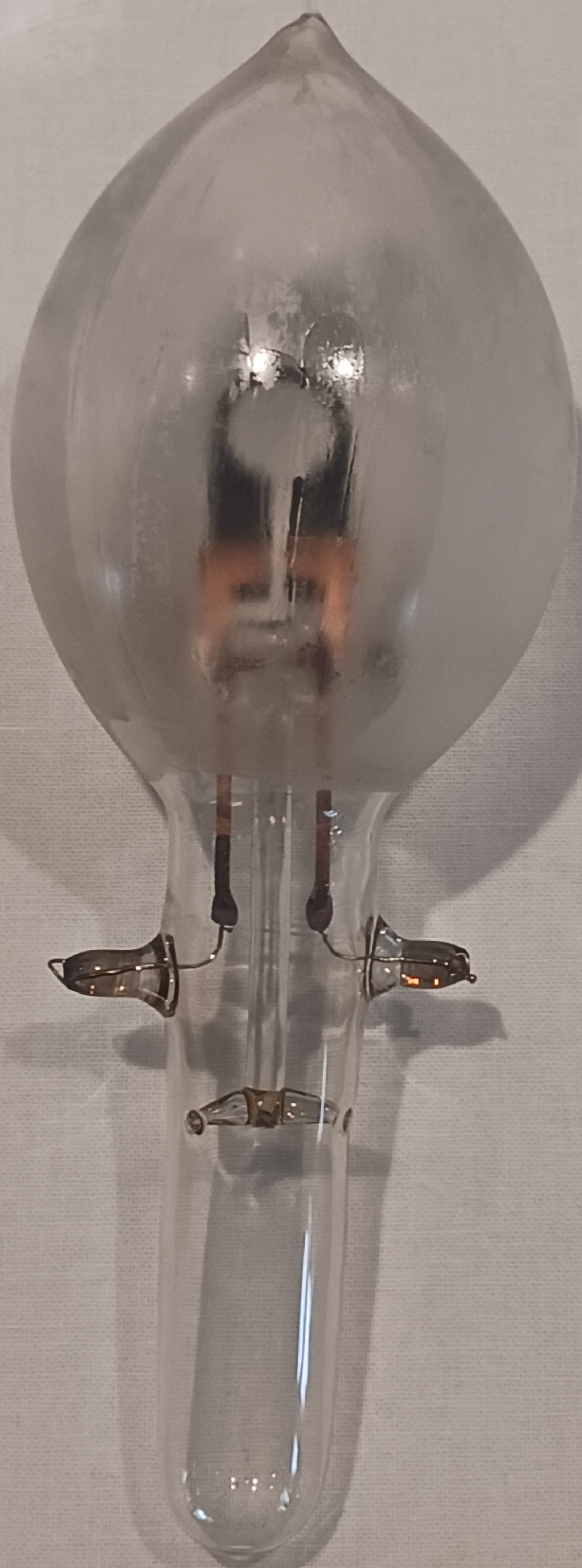
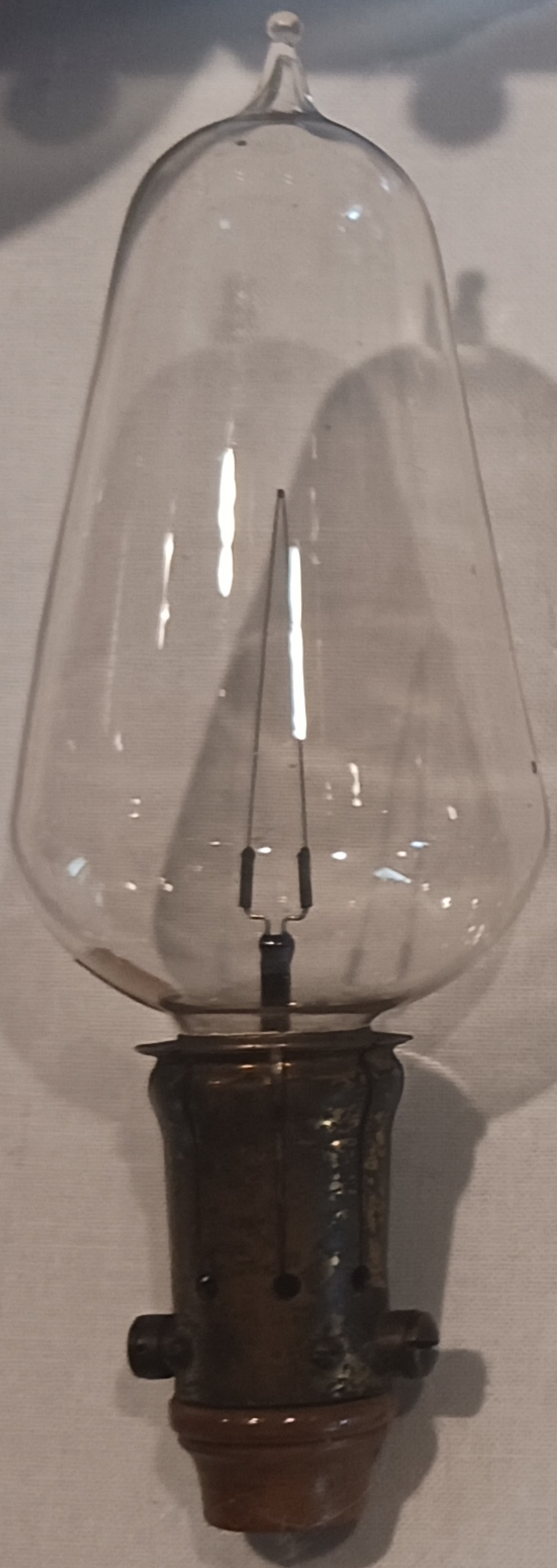
Thomson Houston
c. 1885



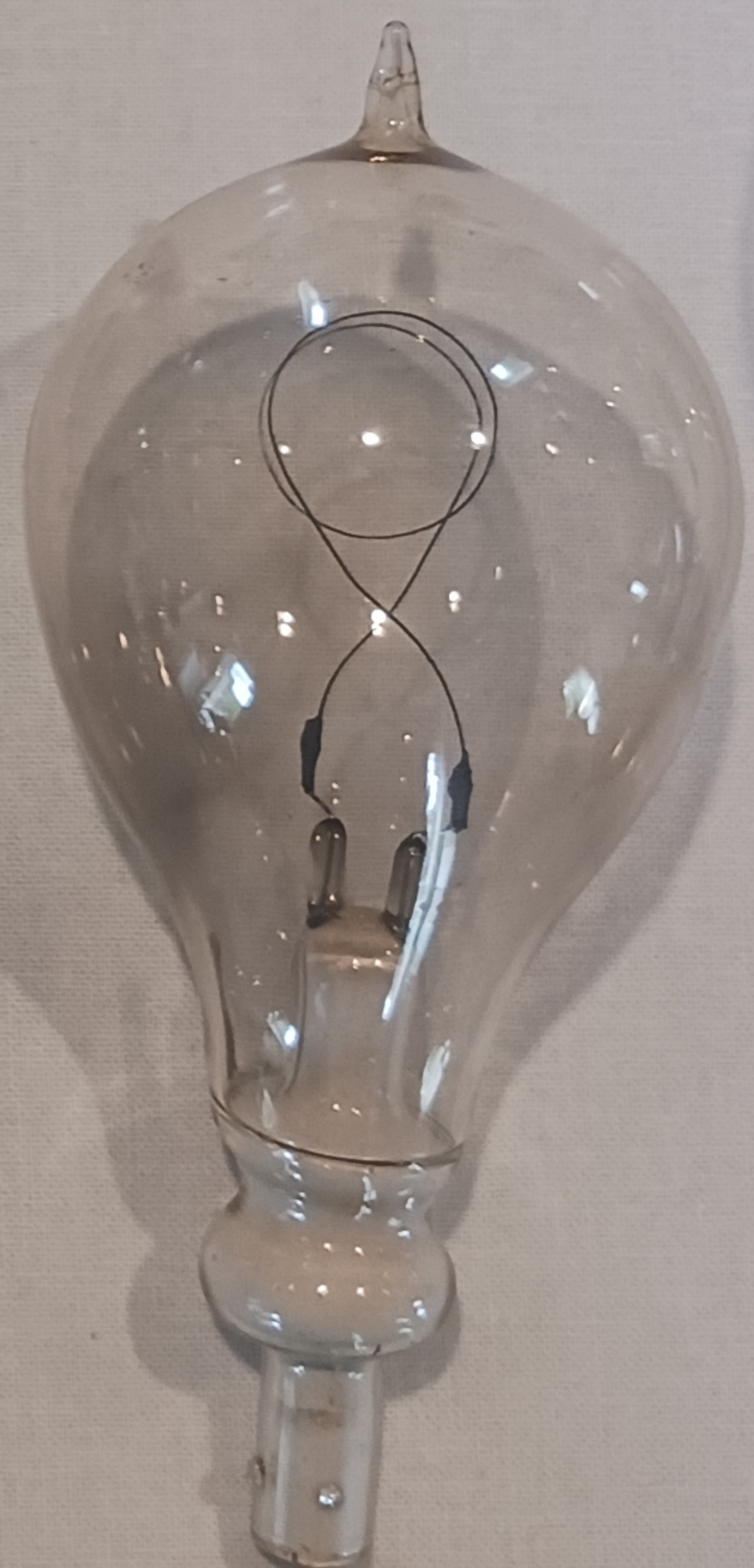
Sun Electric
c. 1887



Woodhouse & Rawson
c. Mid 1880's



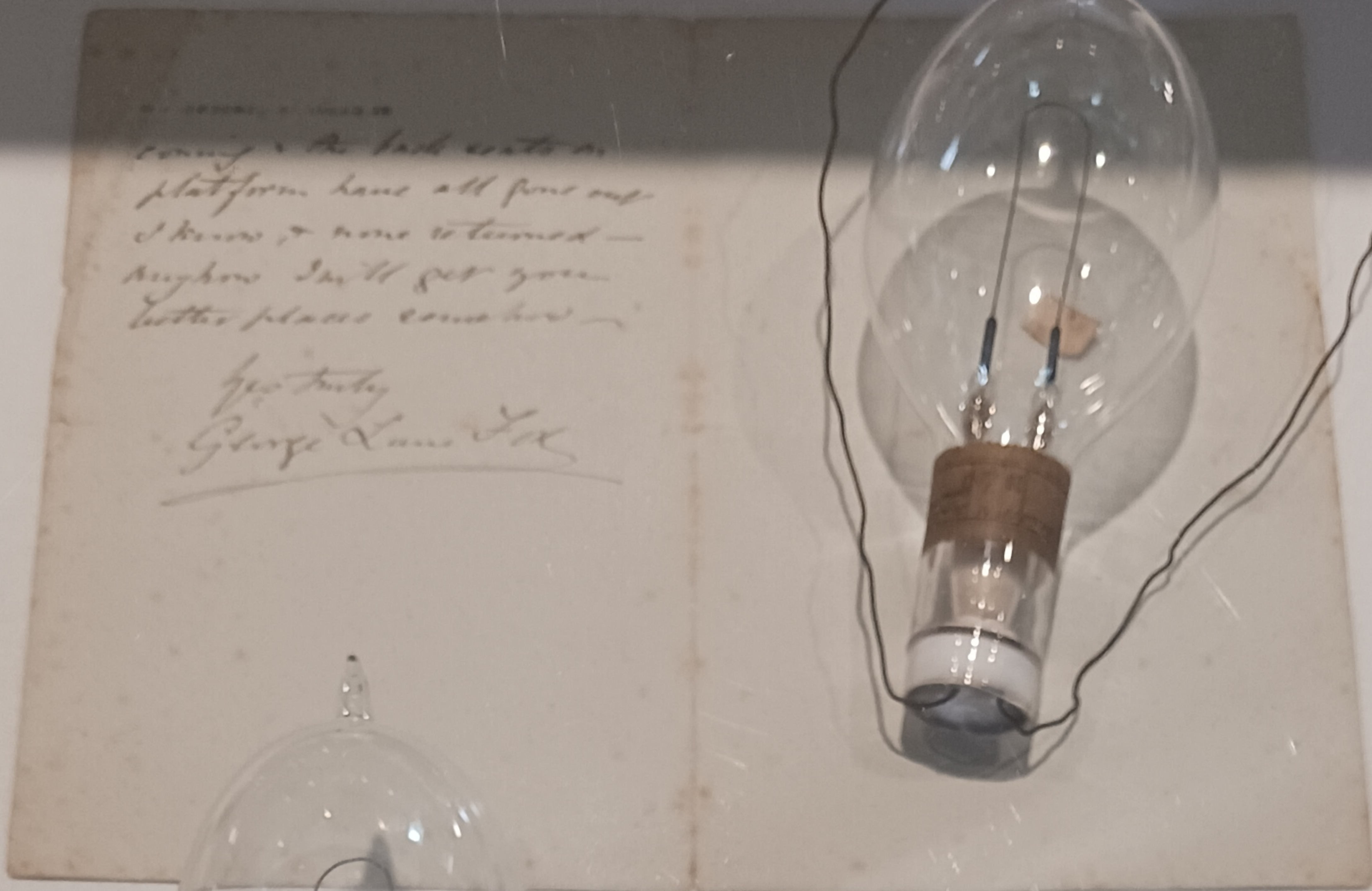
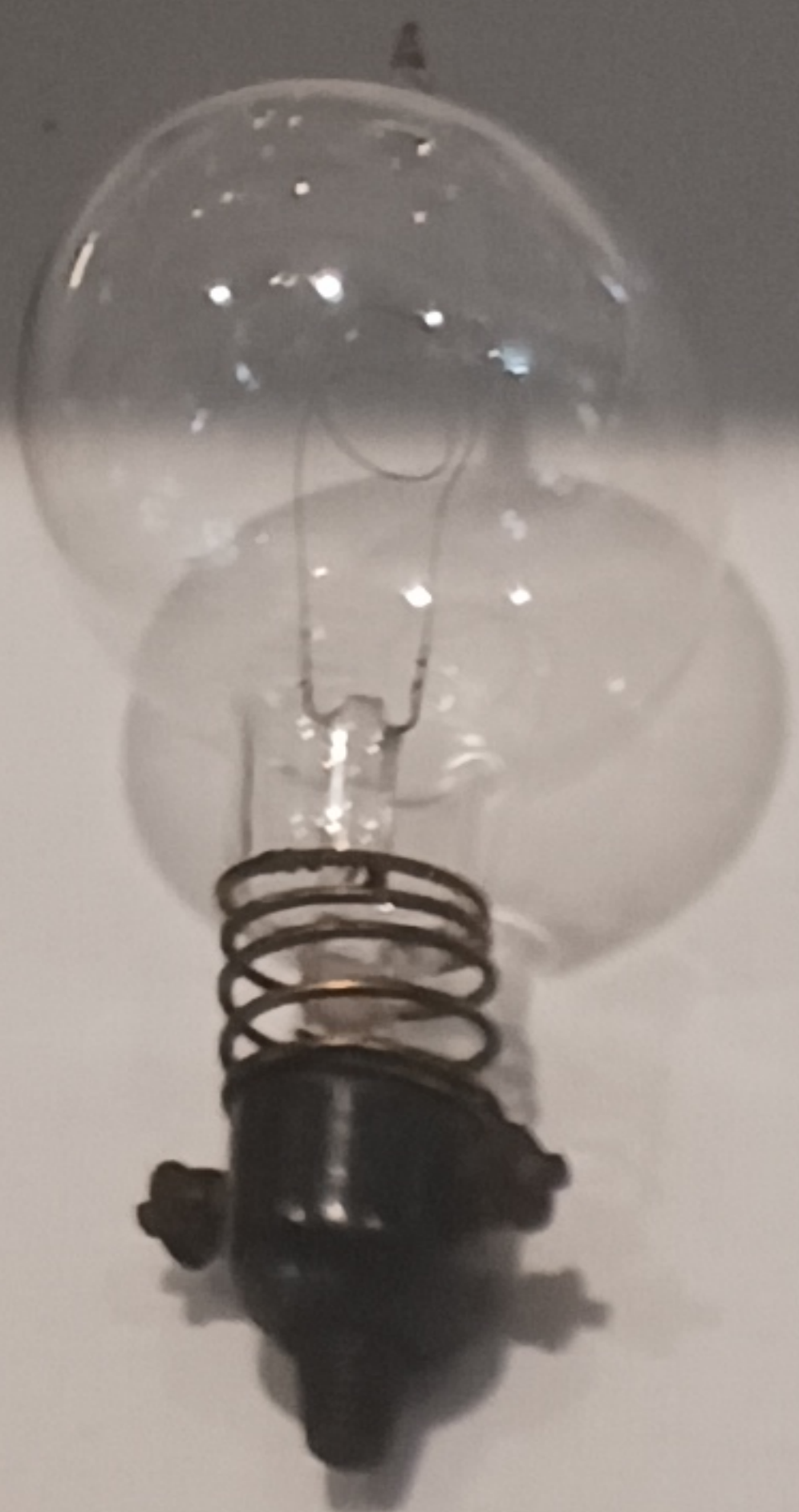
Müller Nothombe
Belgium c. 1882



Greinert & Friedrich
c. 1883



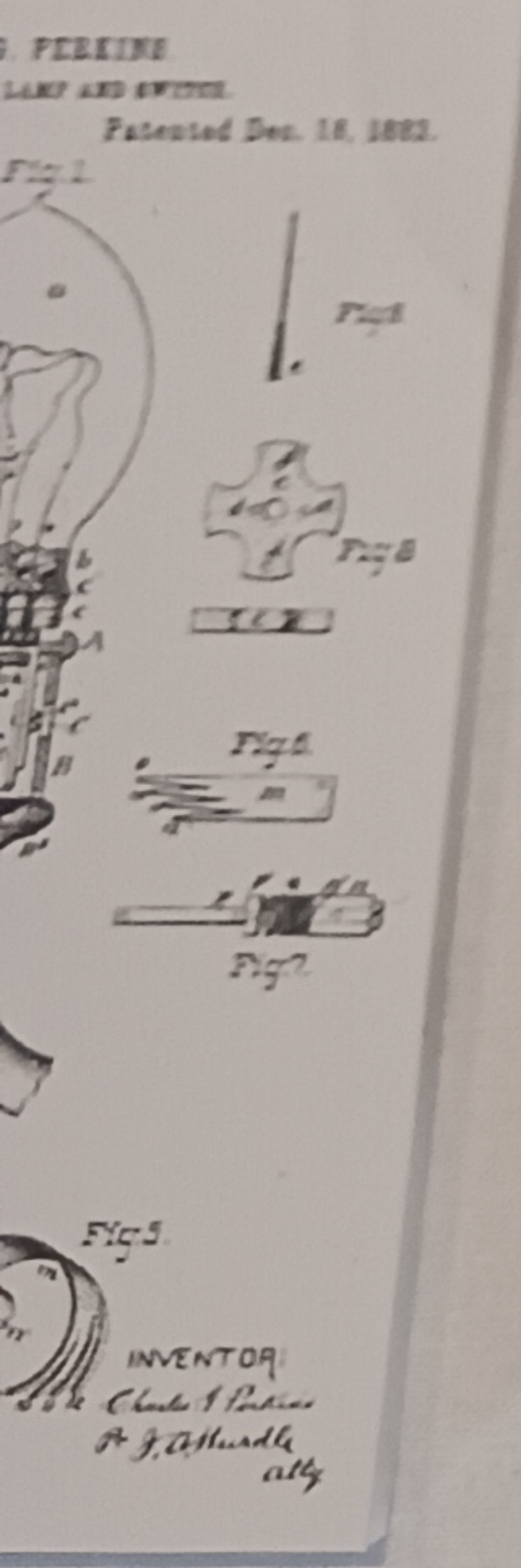
Be
c.



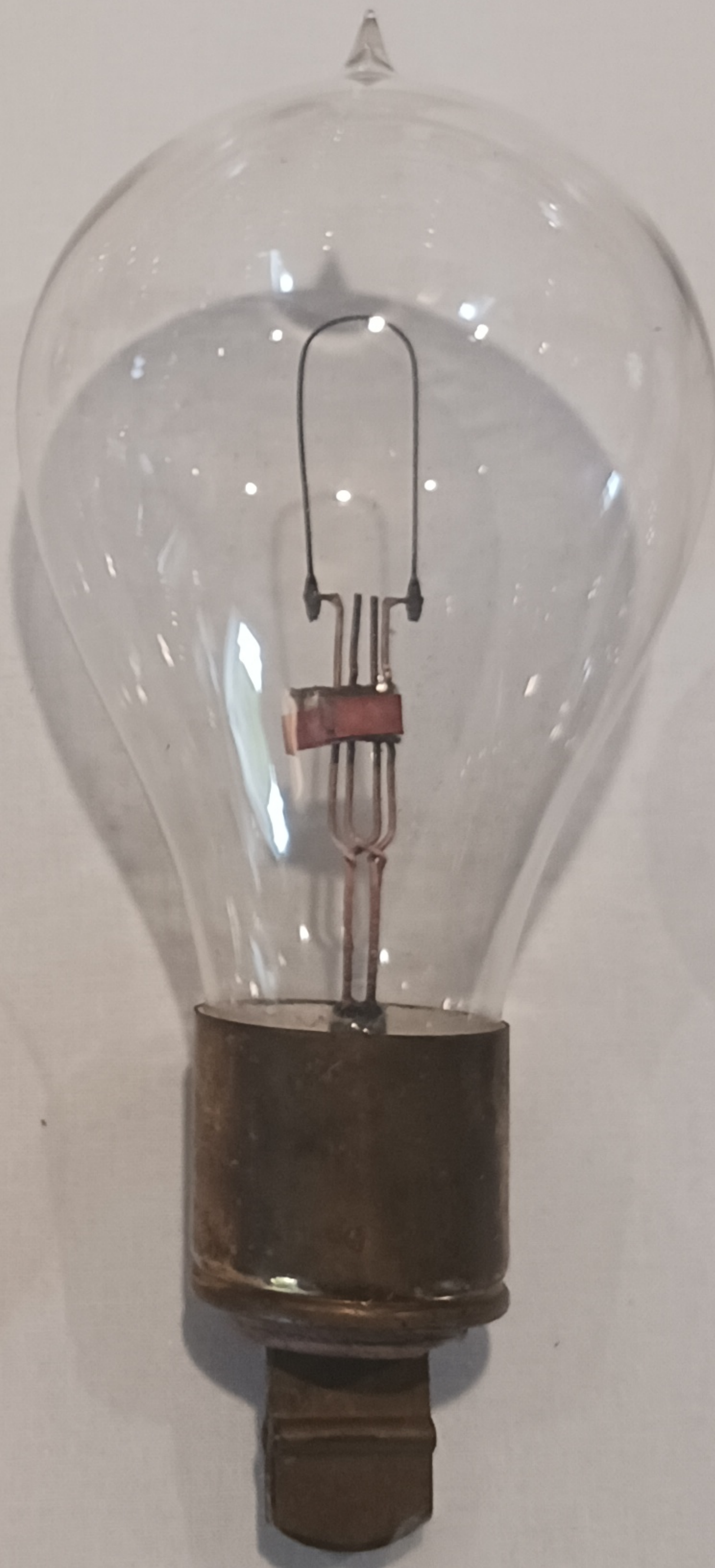
Lane Fox
c. 1882



Gerard "Candelabra"
Exhibited at 1889 Paris Exhibition



Mather Electric Co.
Charles Perkins Patents
c. 1884-85



Schuyler Electric Light Co.
c. Late 1880's

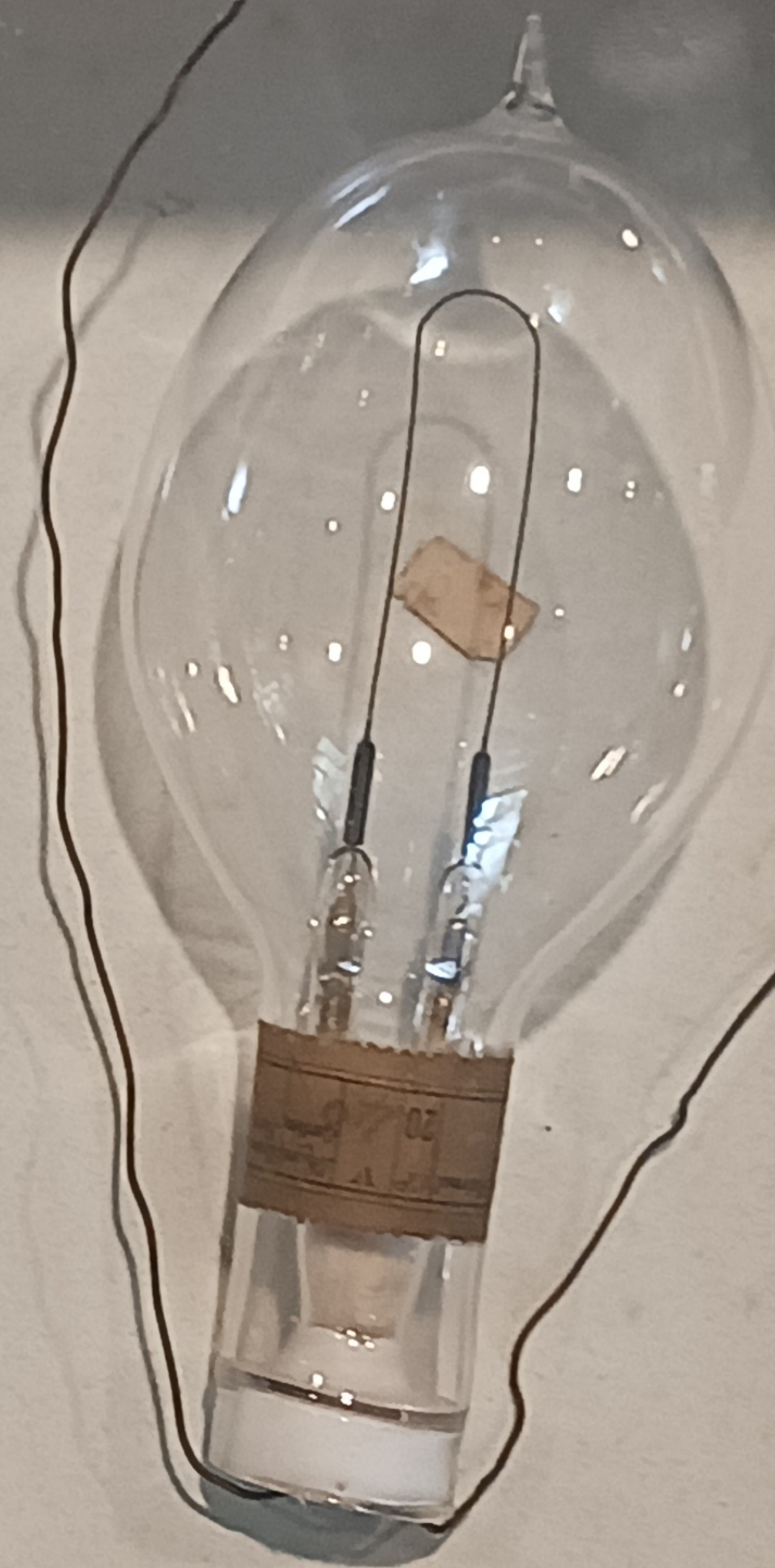


Luminoid
with Hawk-eye Base
c. 1886

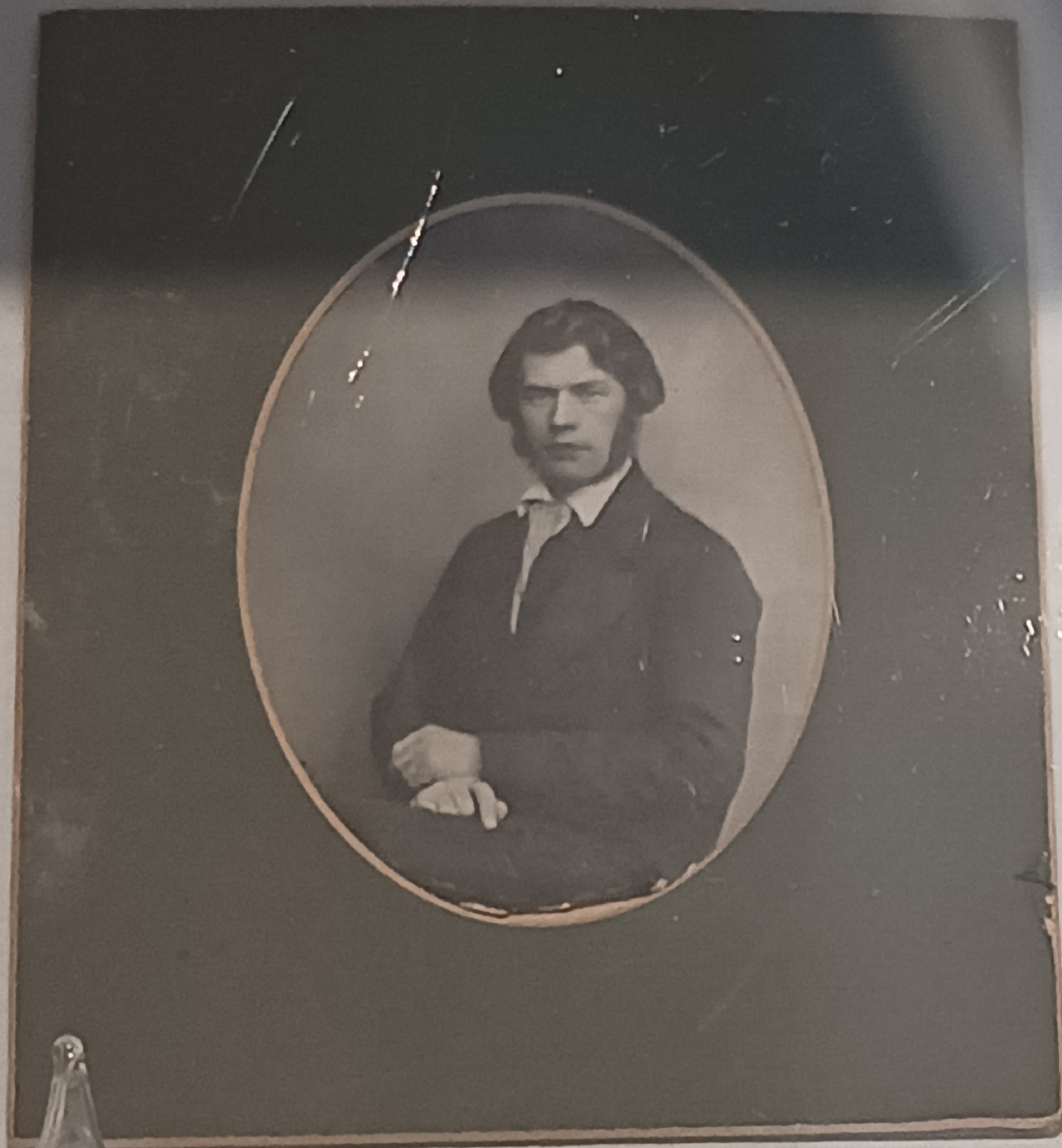


coming & the back seats on
platform have all gone out
I know & none returned -
Anyhow I will get you
better places somehow -

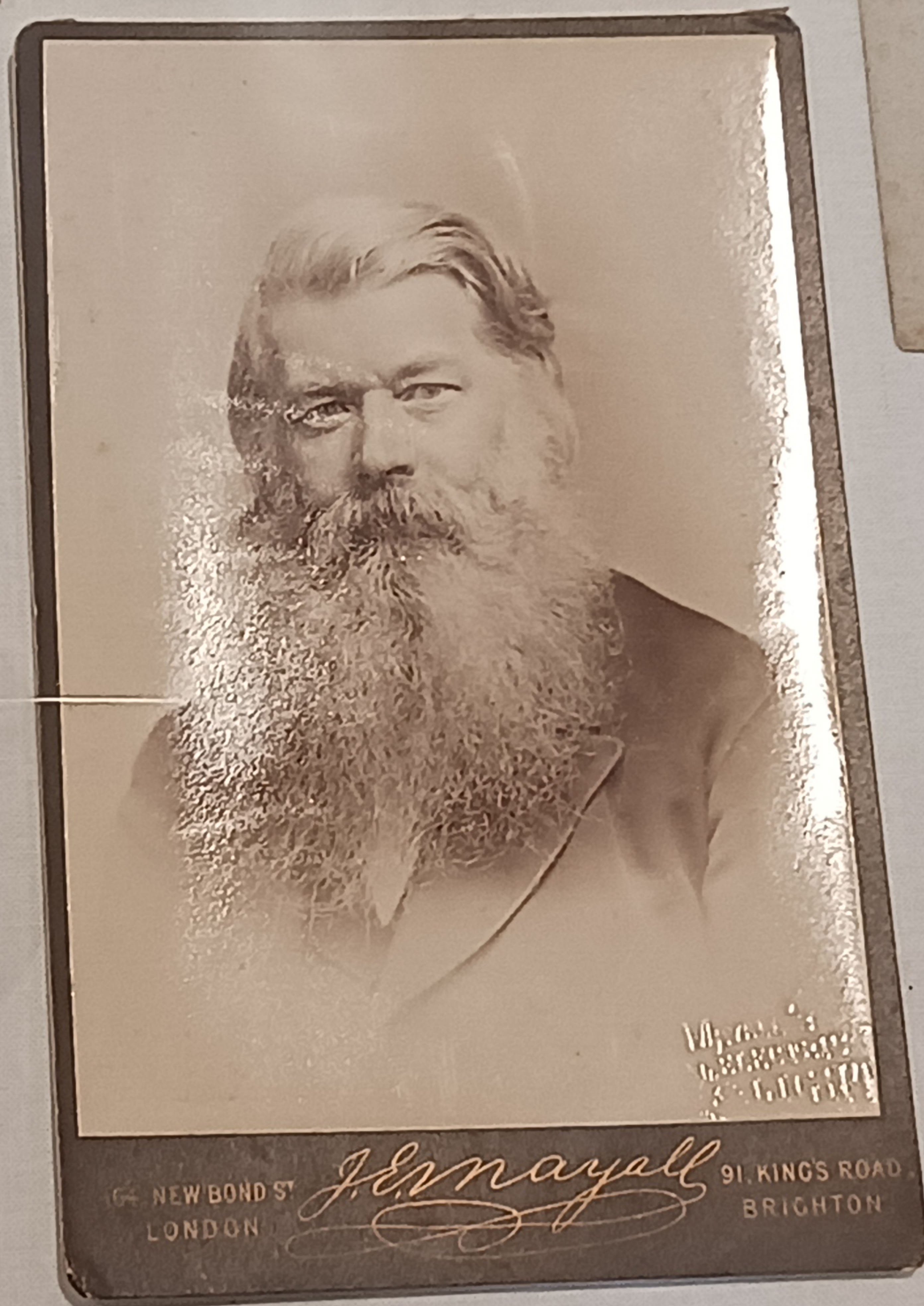
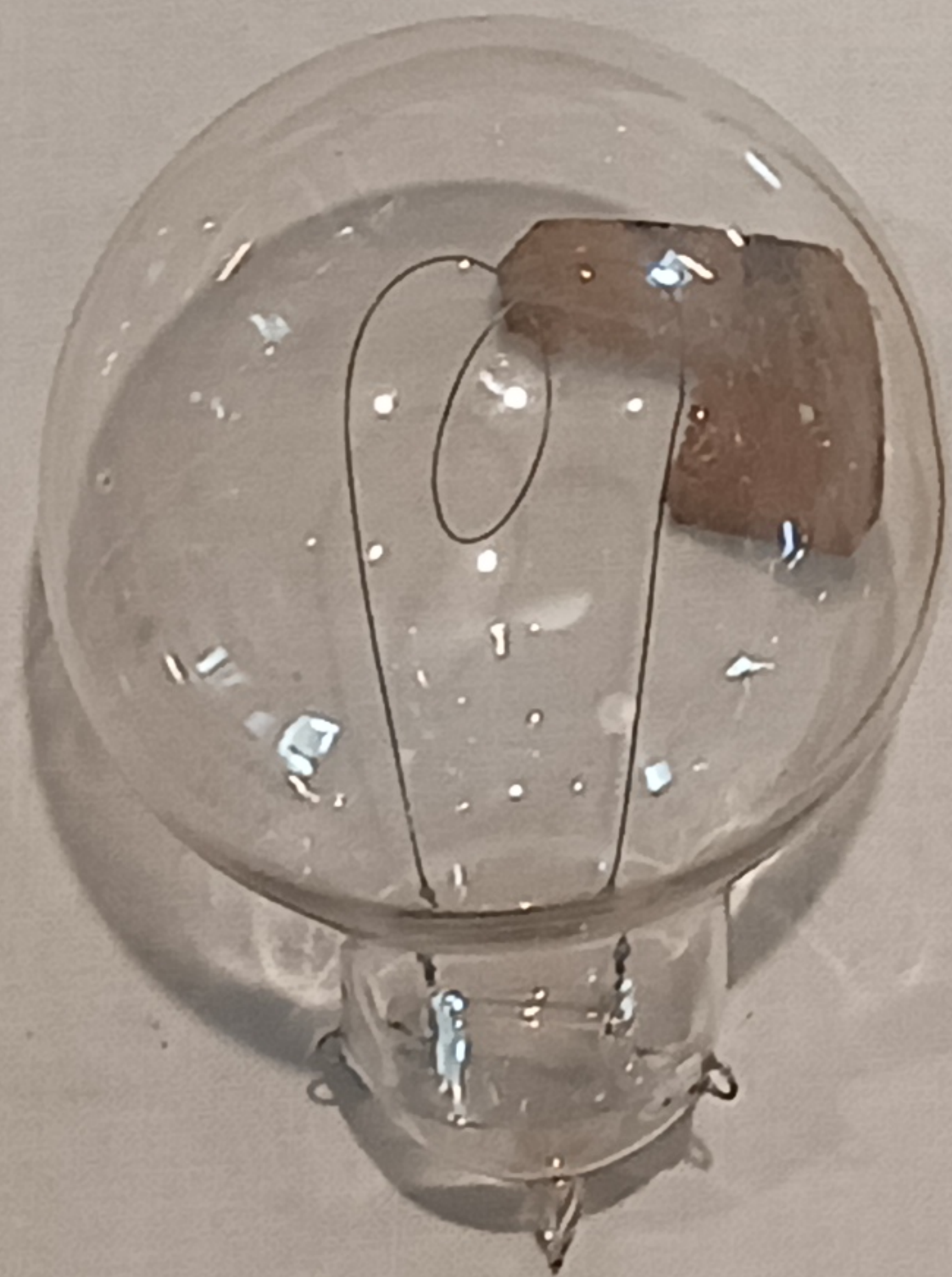
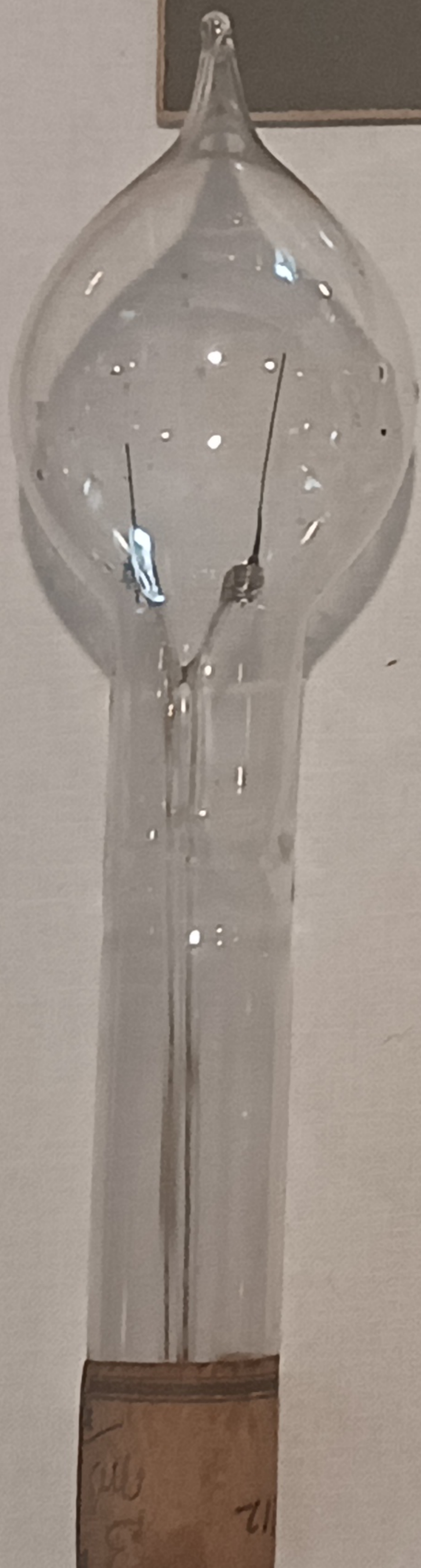
Yrs truly
George Lane Fox



Lane Fox
c. 1882



ST. GEORGE'S 1885
coming & the bath seats on
platform have all gone out
I know & none returned -
anyhow I will get you
better places somehow -
Yrs truly
George Lane Fox



Swan Electric Light Co.
c 1881-1885

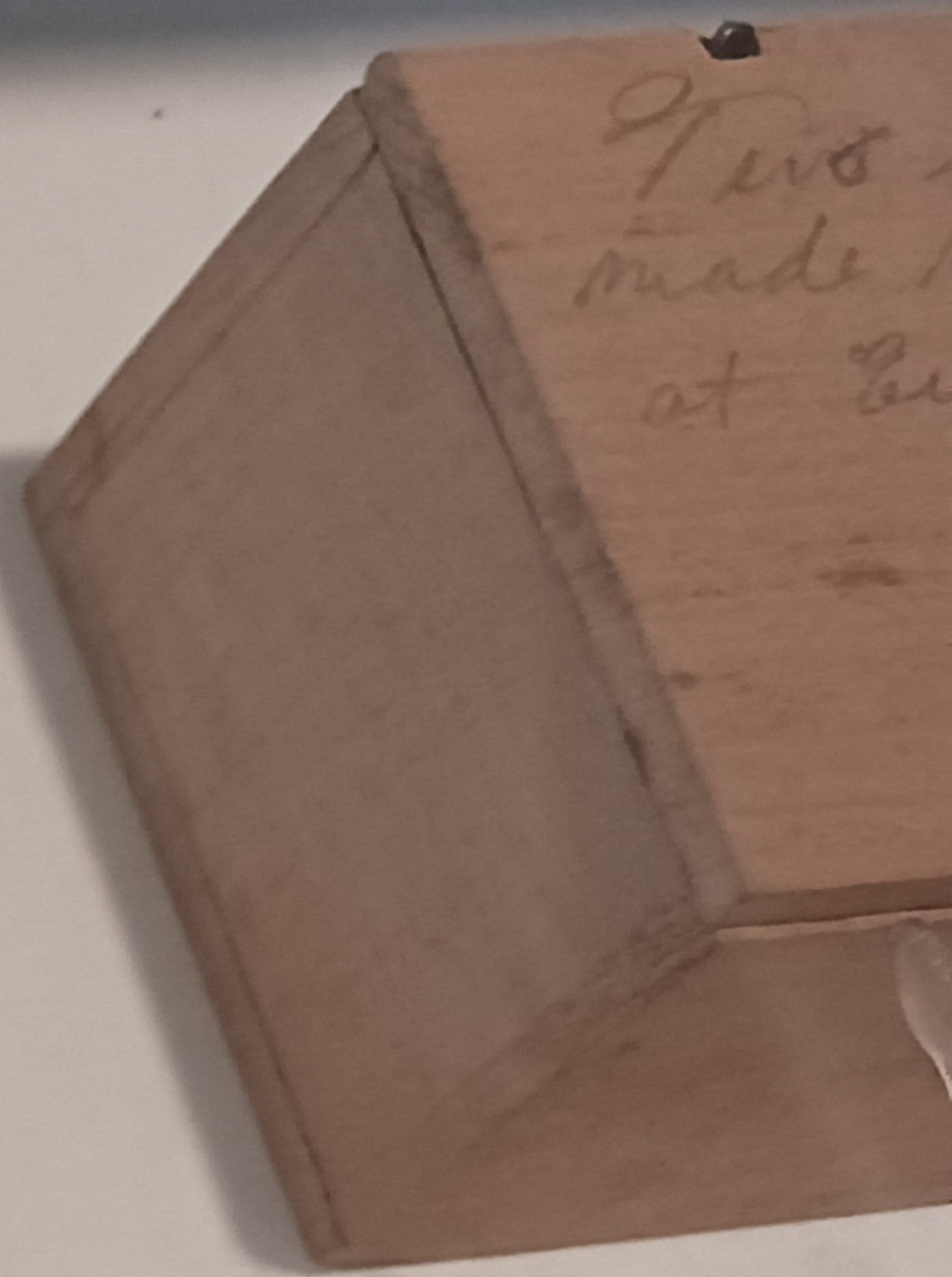


Criggal Interchangeable Base
"Salesmans Sample"
c. 1893





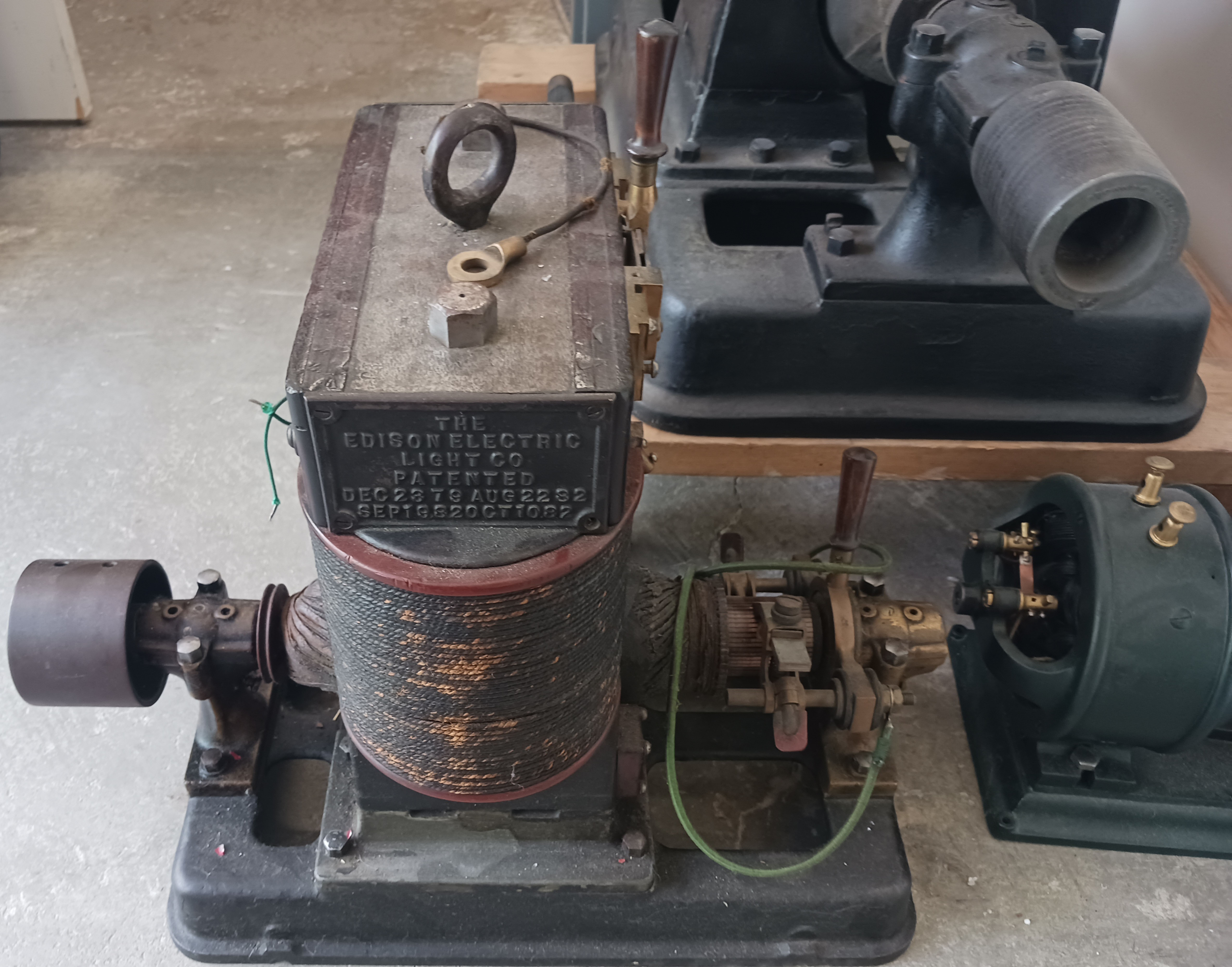
Brush Electric Light Co



W
exper



















WESTON
DYNAMO-ELECTRIC
MACHINE.
UNITED STATES
ELECTRIC LIGHTING CO.
NEW YORK.
MANUFACTURERS:
WESTON FACTORY
NEWARK, N.J.





THE UNITED STATES
ELECTRIC CO.
LIGHTING CO.
NEWARK N.J. U.S.A.
REVEREND





Electricity
1800-1850
www.electricitymuseum.co.uk

Schallhuber
AC Watt Hour Meter
1894

Schallhuber
AC Watt Hour Meter
1894

Sutton
AC Induction Lamp-Hour Meter
1892

Kilowatt Hours
1892





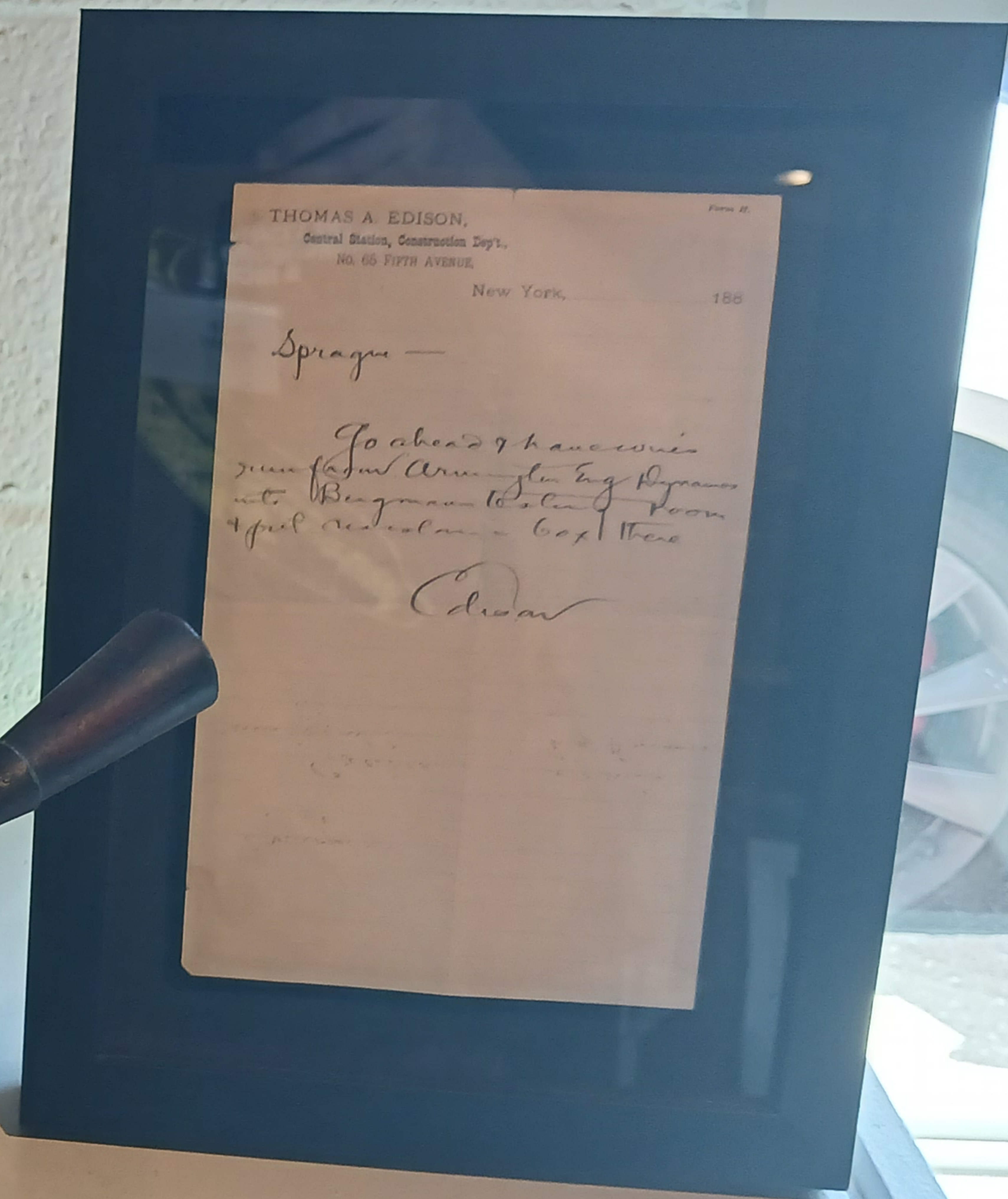
THOMSON INCANDESCENT DYNAMO
VOLTS 110 SPEED 1800 RPM
CLASS D110
PATENTED IN GREAT BRITAIN
AND IN THE UNITED STATES
BY THOMSON-HOUSTON ELECTRIC CO.
LYNN, MASS., U.S.A.

Thomas Edison Incandescent Dynamo
c. 1880

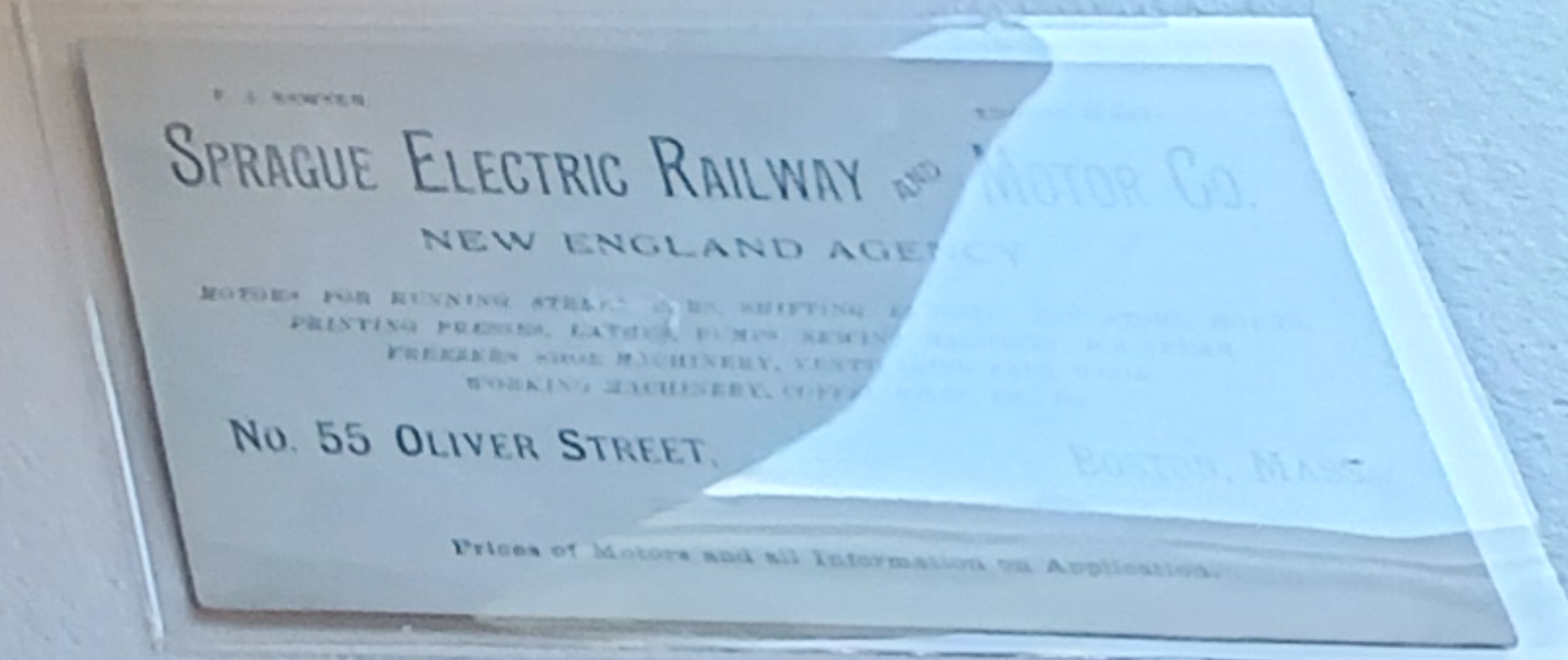
THOMSON DYNAMO-ELECTRIC MACHINE
NO. 3604
PATENTED-SEPT. 2:79-JAN. 13'80. JAN. 20'80-OCT 5'80.
JUN. 7'81-FEB. 6'83. JUL. 17'83-APR. 8'84.
MANUFACTURED BY
THOMSON-HOUSTON ELECTRIC CO.
LYNN, MASS. U.S.A.



Sprague Electric Railway & Motor Co. Motor
c. 1887



Letter from Thomas Edison to Frank J. Sprague
On connecting dynamo service to Bessmann & Co.
c. 1885



SPRAGUE ELECTRIC RAILWAY & MOTOR CO.
NEW ENGLAND AGENTS
BOSTON FOR RAILROADS, TRAMWAYS, & STREET CAR LINES
PROVIDING POWER, LIGHTING, & TRAMWAY SYSTEMS
FURNISHING AND MAINTAINING ELECTRIC MOTORS
AND ALL KINDS OF ELECTRICAL APPARATUS
No. 55 OLIVER STREET, BOSTON, MASS.
Prices of Motors and all Information on Application

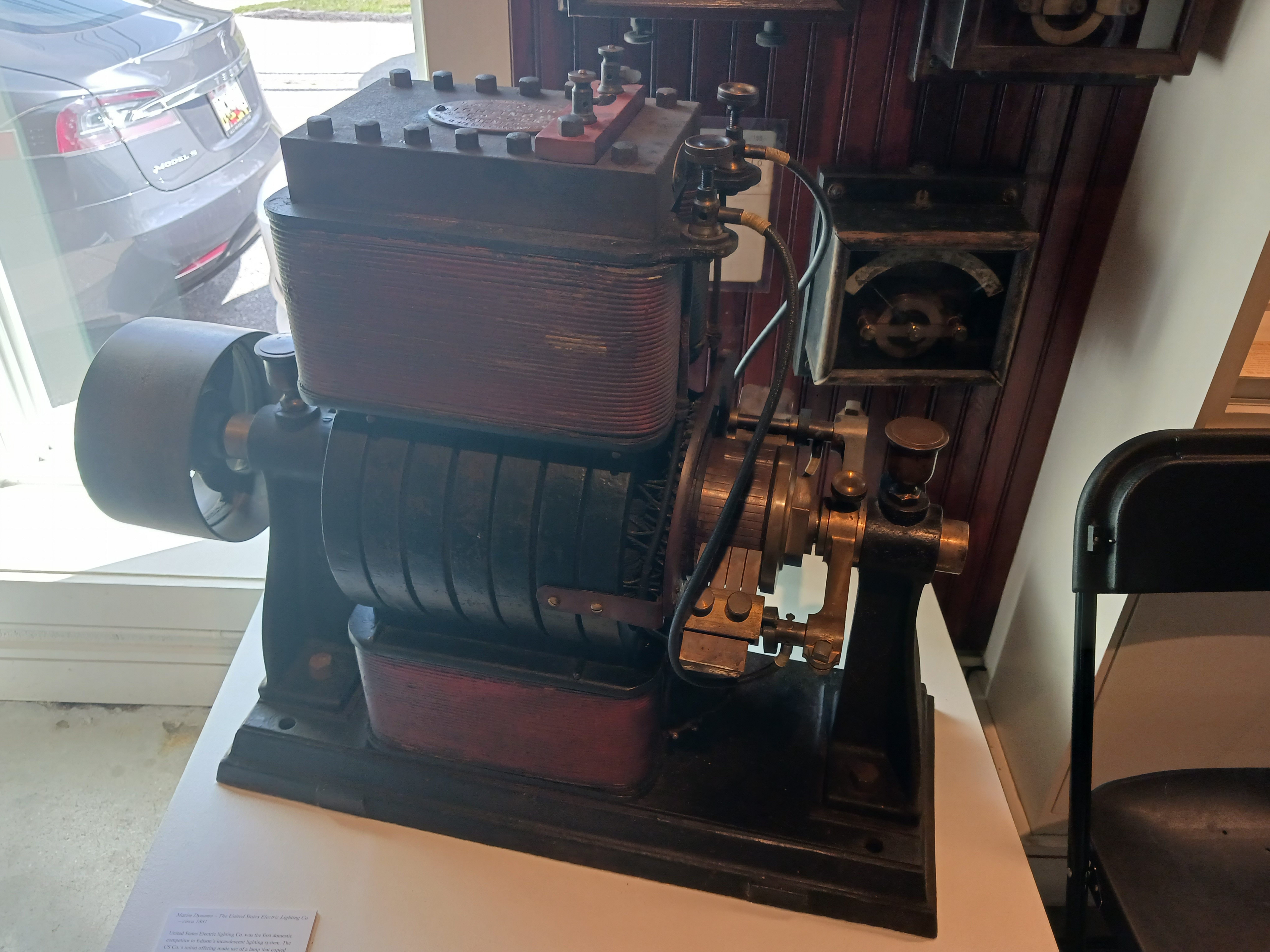
THOMAS A. EDISON,
Central Station, Construction Dep't.,
No. 65 FIFTH AVENUE,

New York, 188

Sprague —

Go ahead & have wires
run from Armington Eng Dynamos
into Bergmann Testing Room
& put resistor - box there

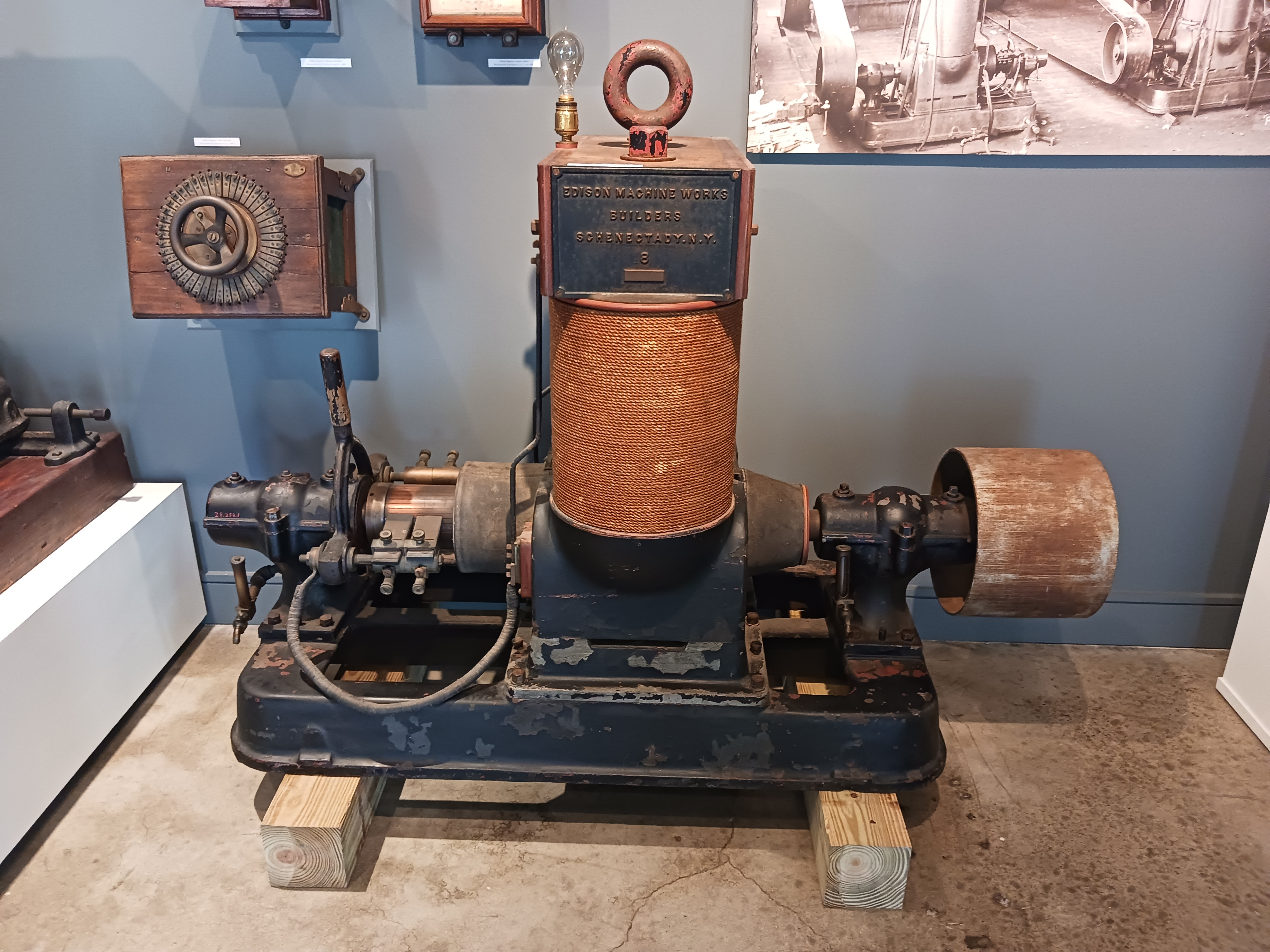
Edison



Maxim Dynamo - The United States Electric Lighting Co. - circa 1887

United States Electric Lighting Co. was the first domestic competitor to Edison's incandescent lighting system. The US Co.'s initial offering made use of a lamp that copied

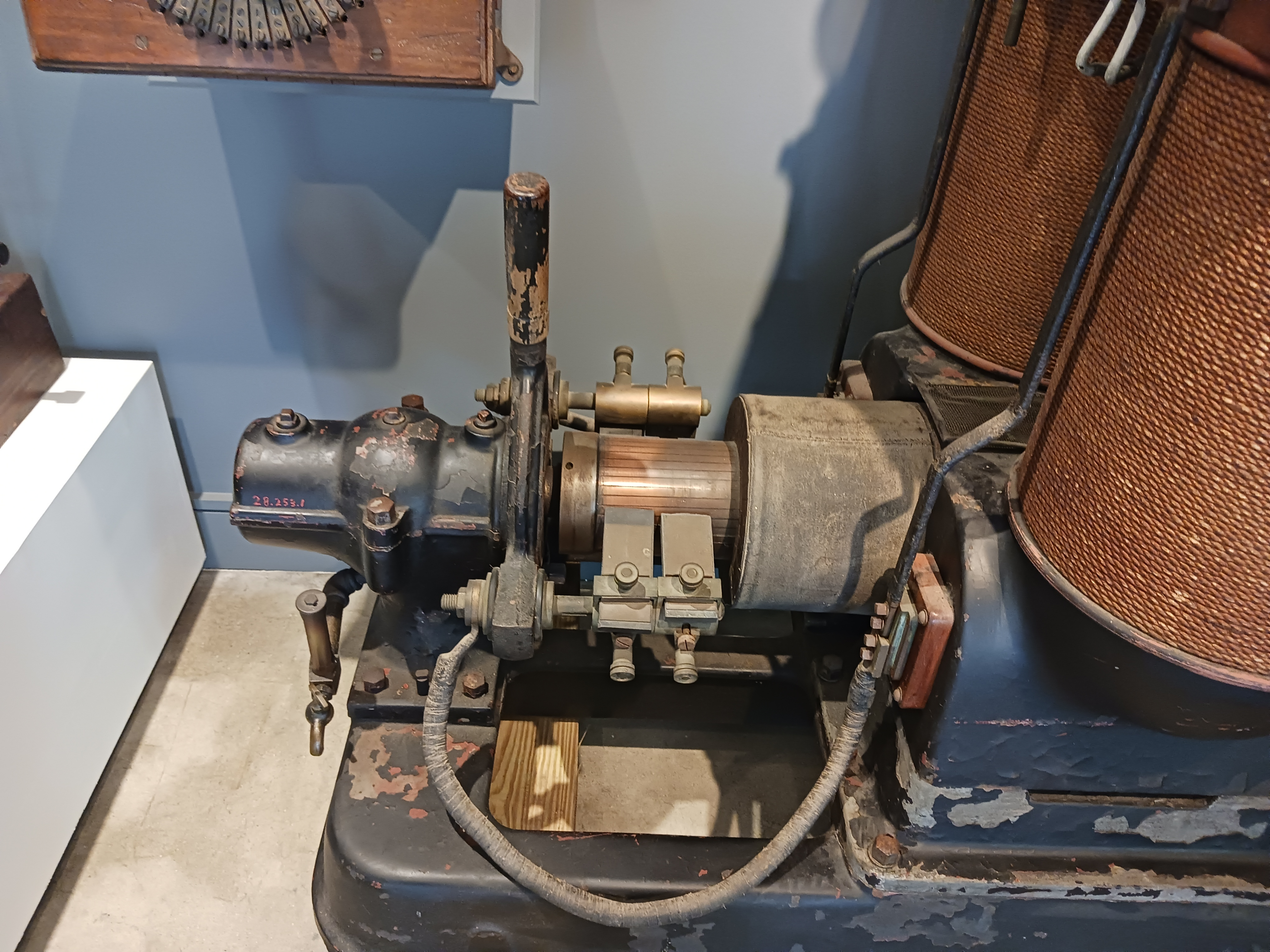
THE
U.S. ELECTRIC
LIGHTING CO.
NEW YORK
PATENTED
APRIL 13. 1875 JUNE 8. 1880 NOV 2. 1880

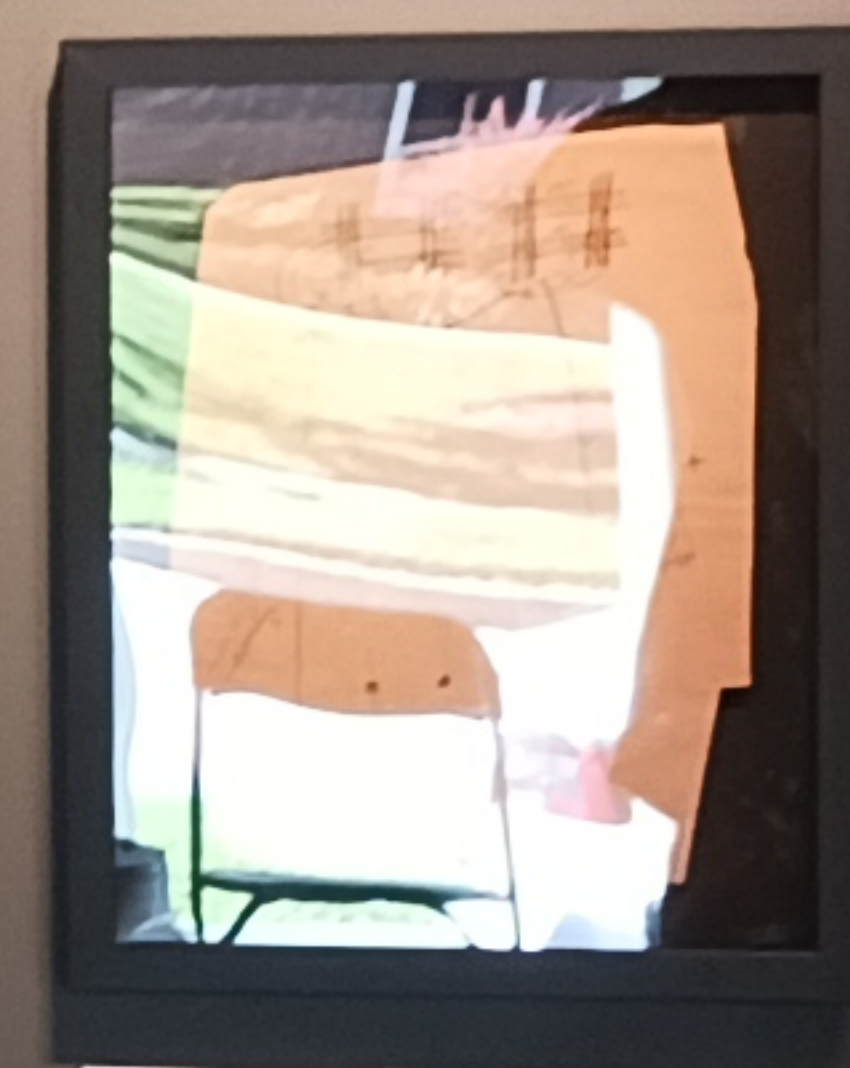
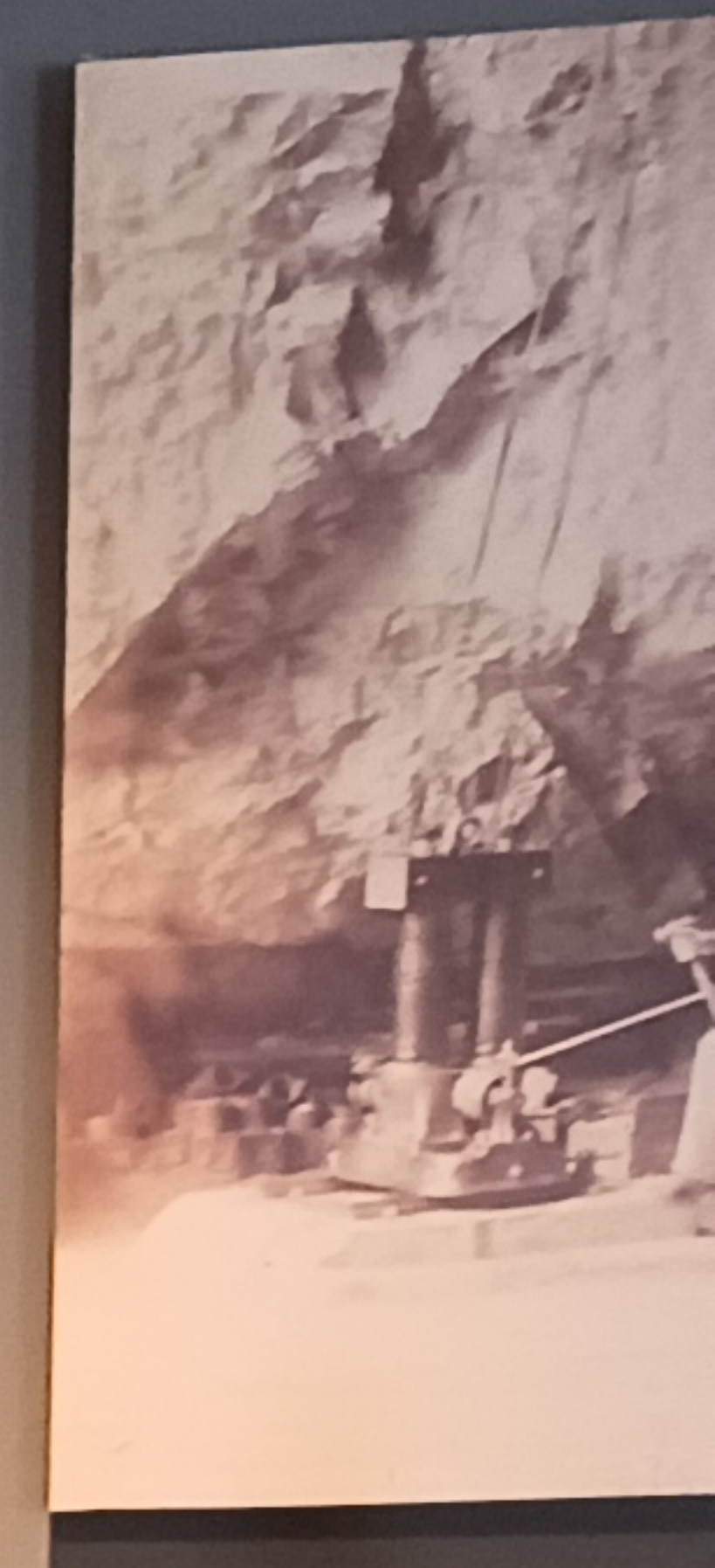
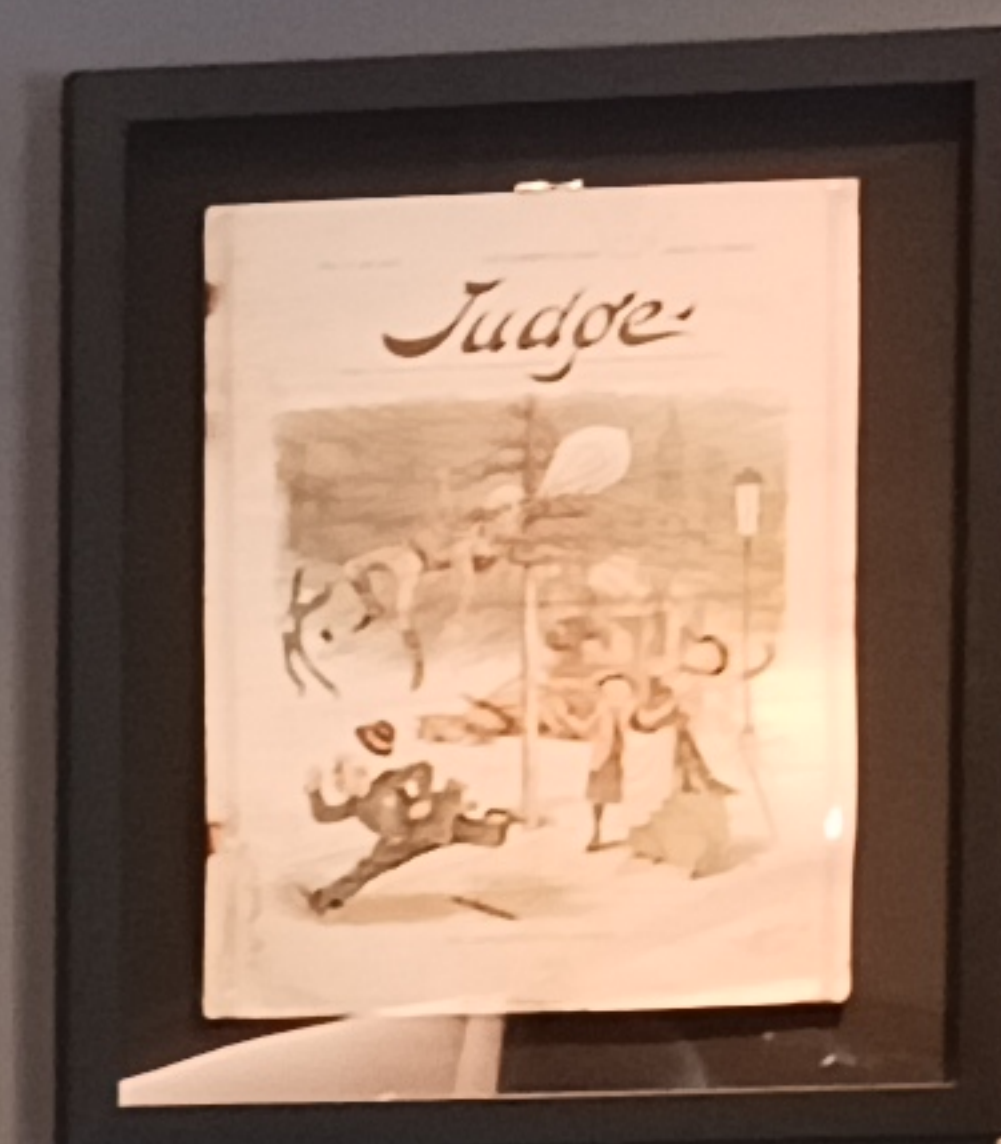
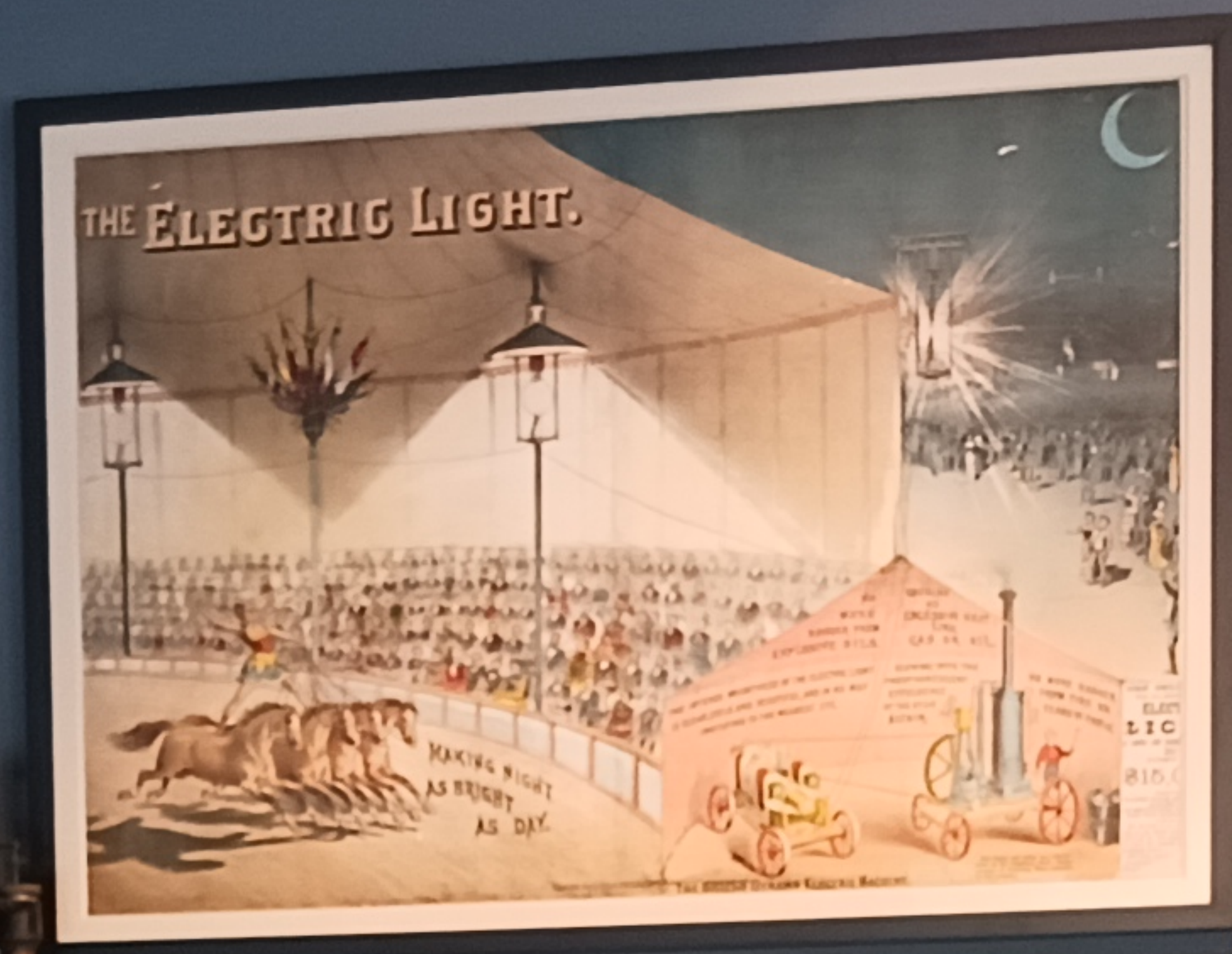
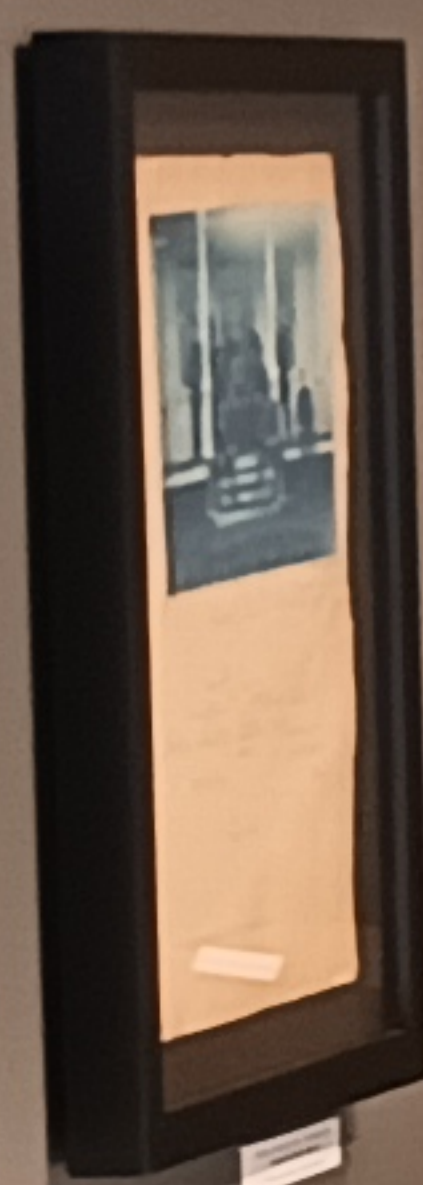
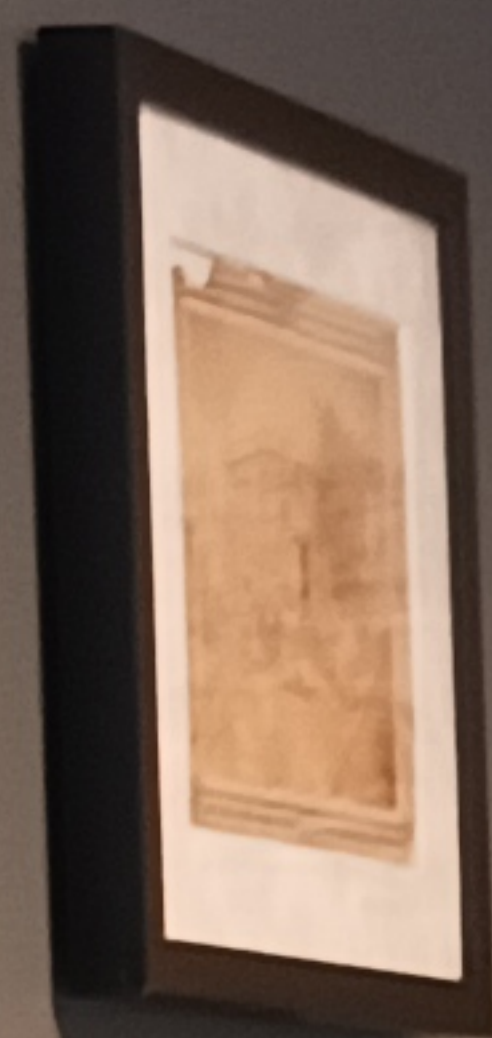
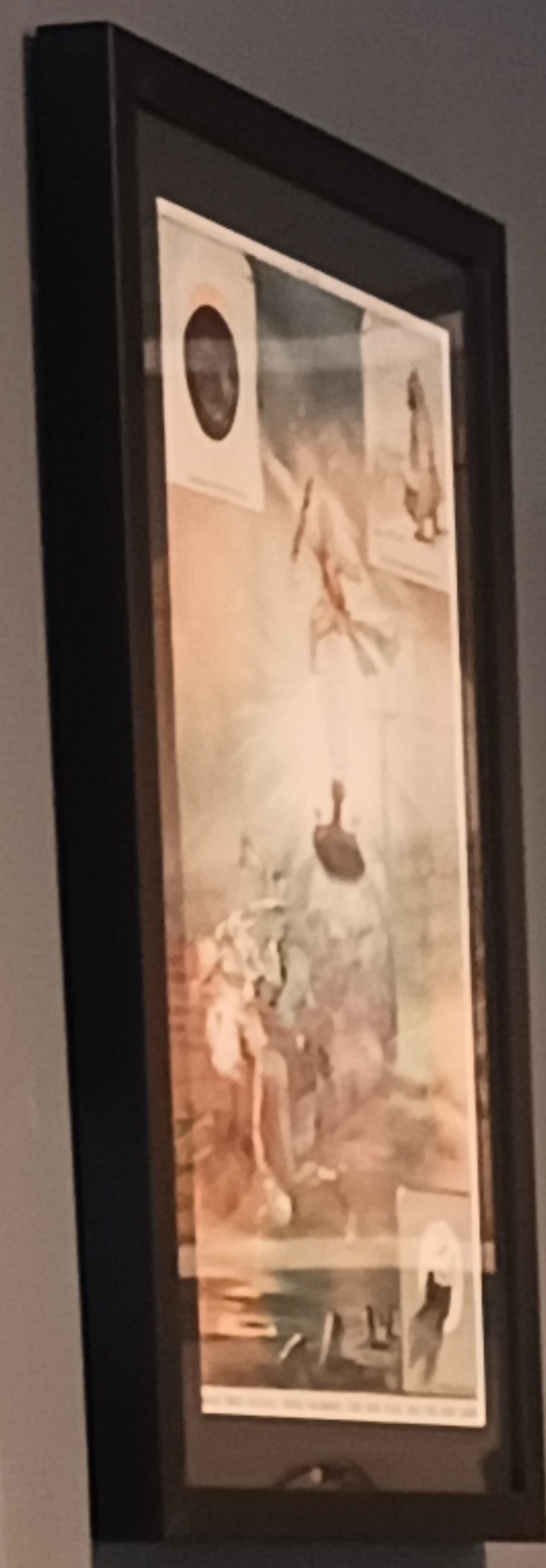
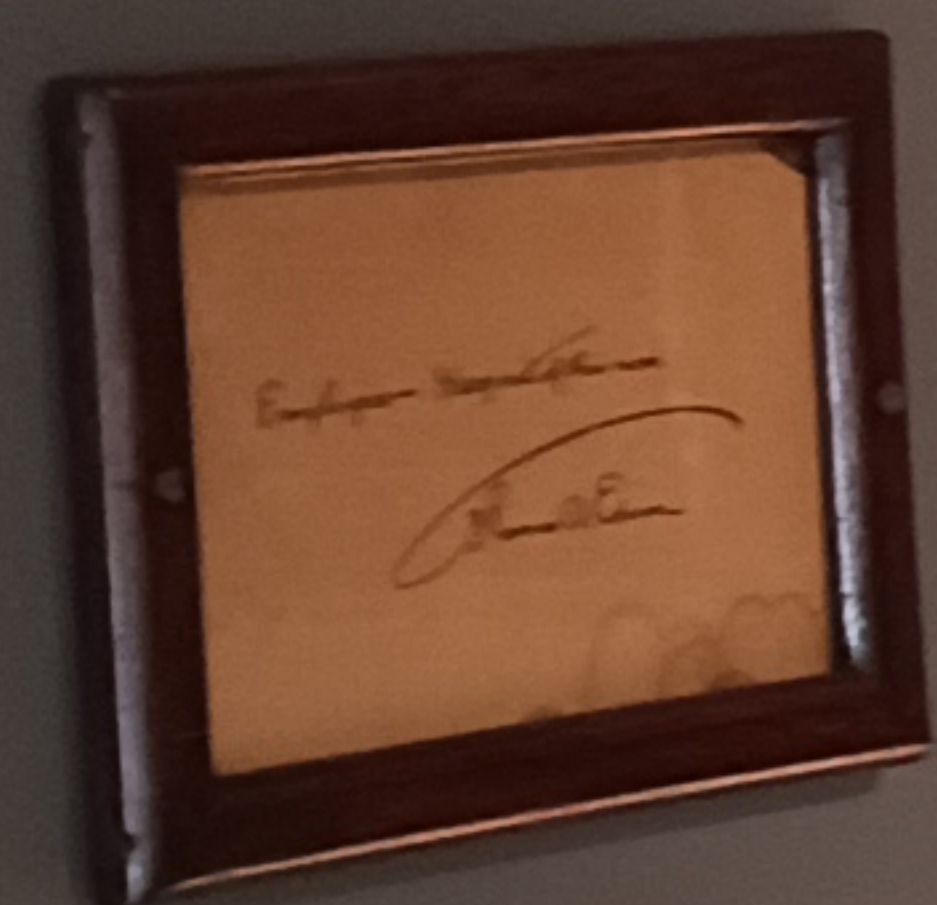


EDISON MACHINE WORKS
BUILDERS
SCHENECTADY, N.Y.
3



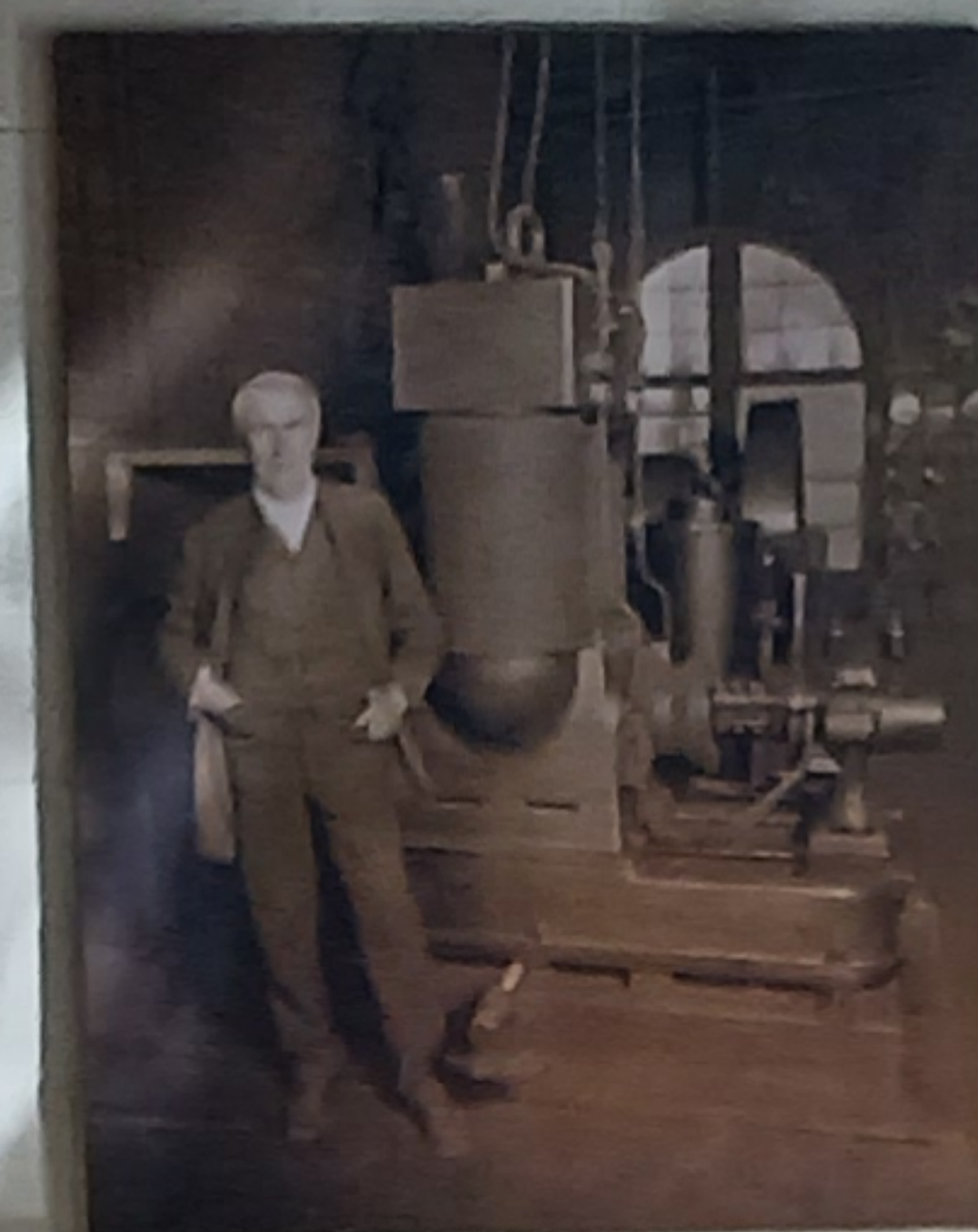
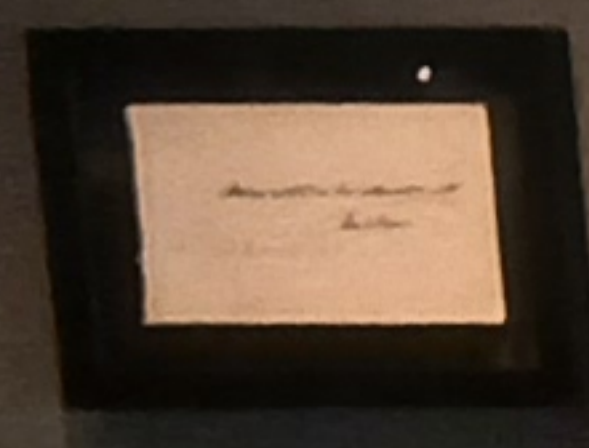
EDISON MACHINE WORKS
BUILDERS
SCHENECTADY, N.Y.
2

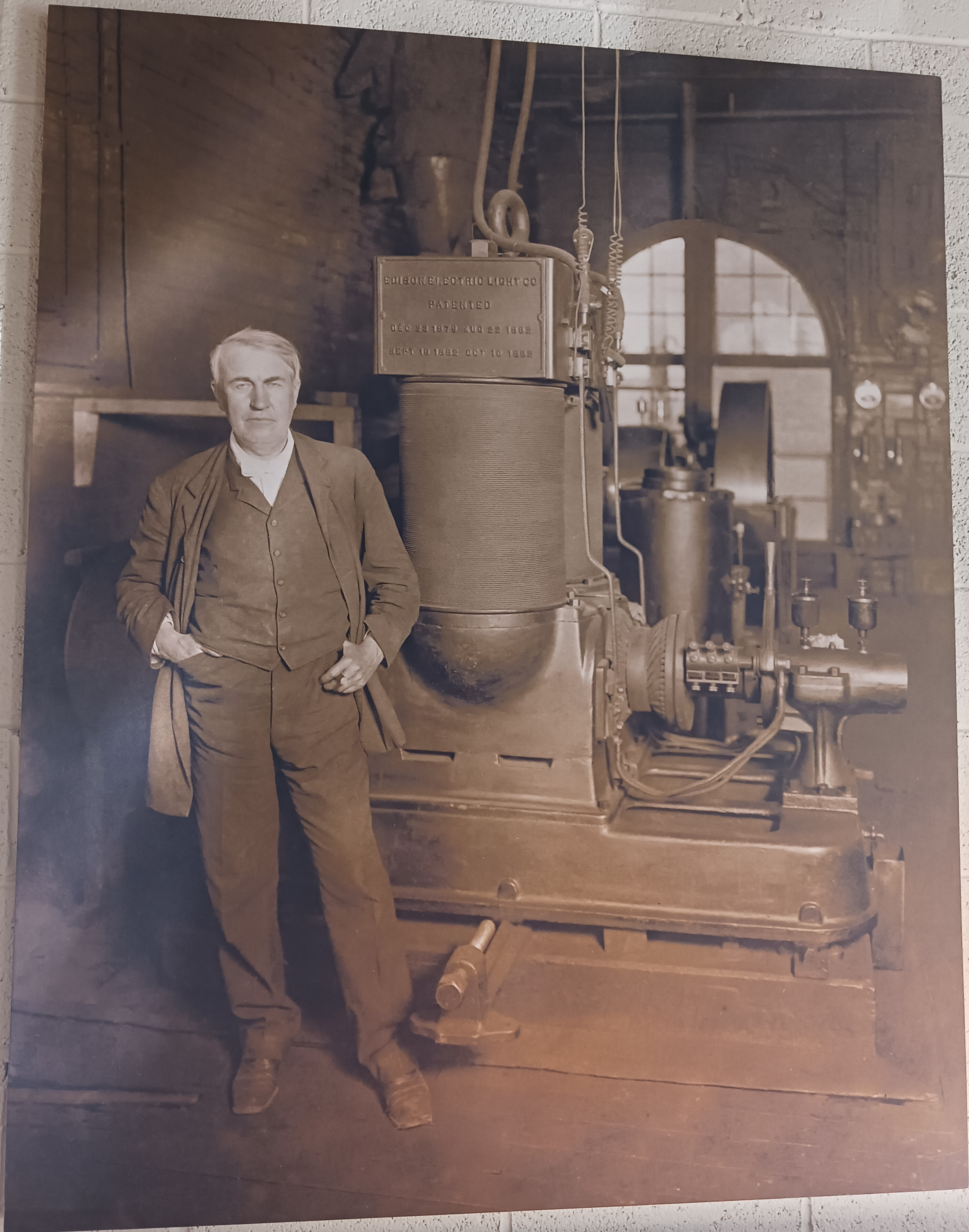




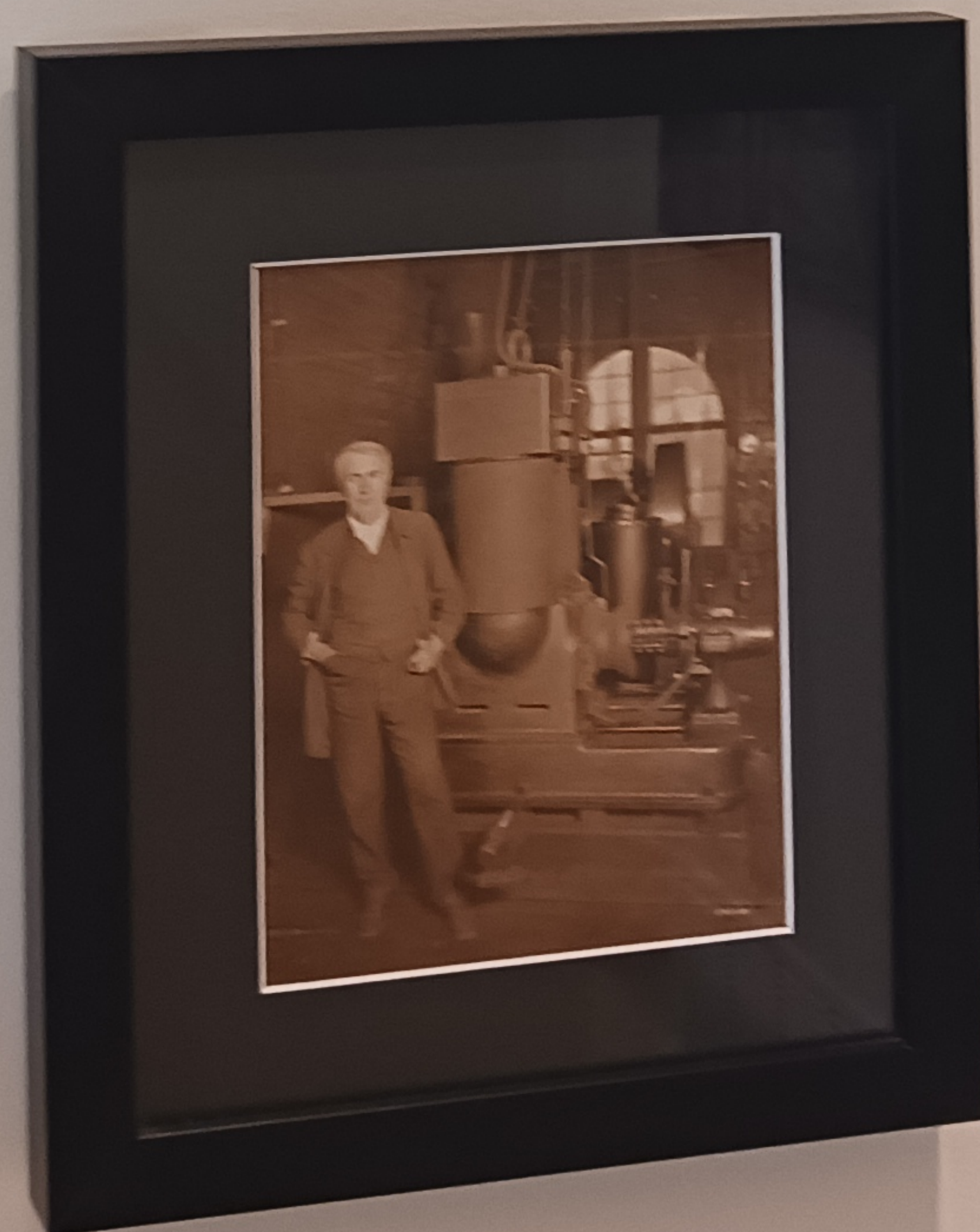
"All things come to him
who hustles while
he waits"

-Thomas A. Edison



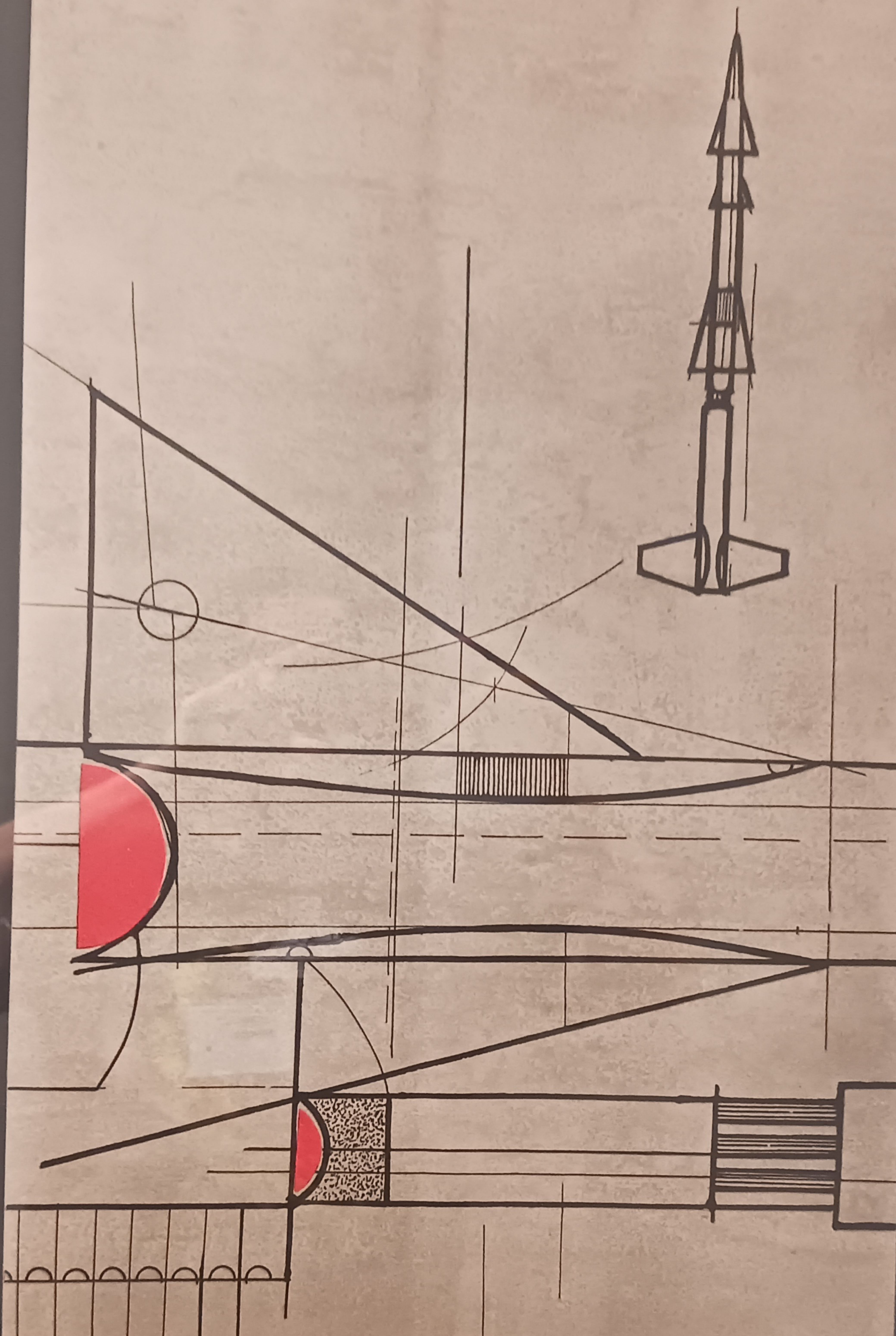






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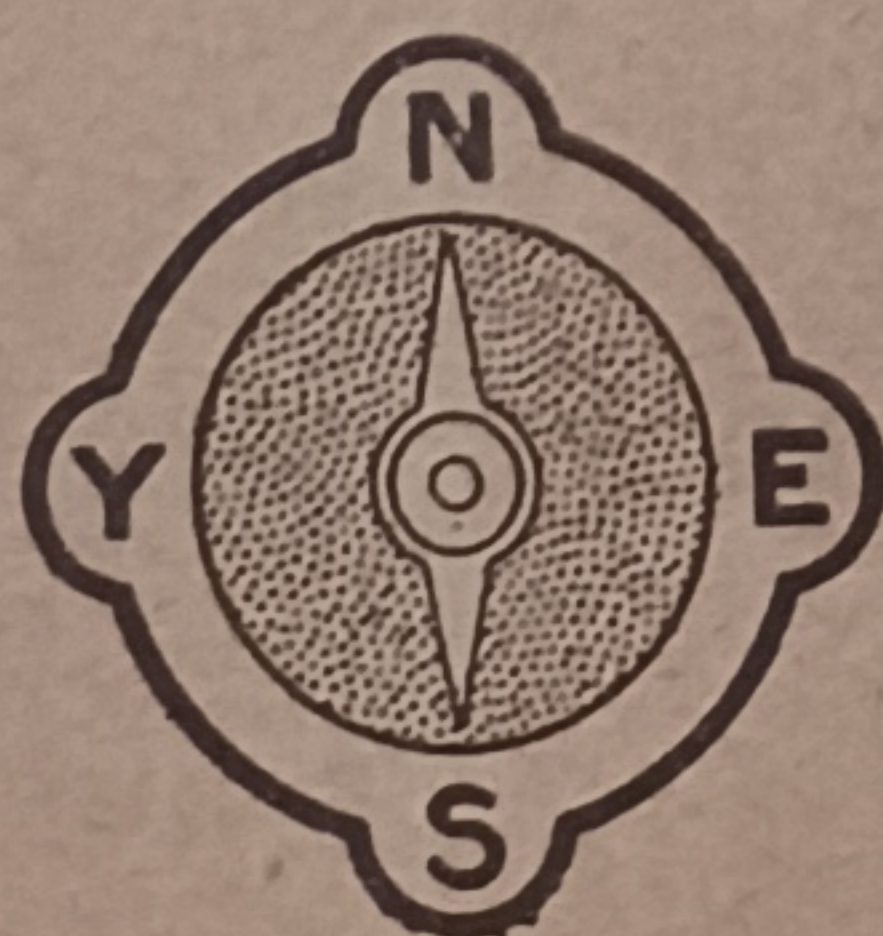


See page 28.
E. S. Lincoln

The William J. Hammer Historical Collection of Incandescent Lamps

BY

WILLIAM J. HAMMER



Reprinted from the Transactions of the New York Electrical Society,
(New Series, 1913, No. 4)

ORGANIZED UNDER THE LAWS OF MONTANA TERRITORY

Brush Electric Light & Power Company

OF HELENA, M.T.



SHARES
\$ 50.00
EACH.

CAPITAL
25 000 00
DOLLARS.

This is to Certify that W. H. Selbauer is owner of
Five Shares of the Capital Stock of the
BRUSH ELECTRIC LIGHT & POWER COMPANY, HELENA, M.T. transferable on the books of the Com-
pany in person or by attorney upon the surrender of this Certificate

Helena, Montana, Terr. this Fifth day of October A.D. 1885
Moses Morris Secy. H. M. Parcken Pres.

G. F. Stone.

CATALOGUE OF PARTS
APPARATUS
FOR ARC LIGHTING

SUPPLEMENT
No. 1

THOMSON-HOUSTON
ELECTRIC Co.

BOSTON, MASS.

MAY 15th 1891—2000.

NEW MACHINE SCREWS FOR K LAMPS.

PLEASE INSERT THIS SHEET BETWEEN PAGES 22 AND 23
OF ARC CATALOGUE, EDITION OF DEC. 1, 1890.

In ordering screws for all K lamps use the following list, as all iron screws are now replaced by brass, bronze or nickel-plated iron screws.

In the classification given below, the numbers in the left-hand table include all the iron machine screws formerly used in K lamps, as given in the "Catalogue of Parts." The numbers in the right-hand table represent the brass, bronze or nickel-plated screws which are to replace the above. For example, in ordering the screw fastening armature to rocker, given on page 27 as No. 3 ($\frac{1}{2}$ in. 14-20 R. H.), do not order by the number "3," but by the number opposite to No. 3 in the table below, which is 1400, and the brass screw of the proper size will be sent.

IRON SCREWS FORMERLY USED.

Page.	No.	Dimensions.
23.	657.	1 in. 14-20 R. H.
23.	756.	$\frac{11}{16}$ in. 10-24 R. H.
23.	695.	$\frac{1}{2}$ in. 8-32 R. H.
23.	697.	$\frac{1}{4}$ in. 10-24 R. H.
25.	721.	$\frac{5}{8}$ in. 6-30 F. H.
25.	662.	$\frac{3}{4}$ in. 14-20 F. H.
26.	18.	$\frac{1}{2}$ in. 10-24 R. H.
26.	721.	$\frac{5}{8}$ in. 6-30 F. H.
26.	31.	$\frac{1}{4}$ in. 6-30 R. H.
27.	737.	$\frac{3}{8}$ in. 6-30 F. H.
27.	664.	$\frac{3}{8}$ in. 10-24 F. H.
27.	662.	$\frac{3}{4}$ in. 14-20 F. H.
27.	3.	$\frac{1}{2}$ in. 14-20 R. H.
29.	98.	$\frac{5}{8}$ in. 10-24 R. H.
29.	14.	$\frac{3}{8}$ in. 6-30 R. H.
29.	18.	$\frac{1}{2}$ in. 10-24 R. H.
31.	168.	$\frac{7}{32}$ in. 6-30 R. H.
31.	37.	$\frac{5}{16}$ in. 6-30 R. H.
31.	31.	$\frac{1}{4}$ in. 6-30 R. H.
32.	31.	$\frac{1}{4}$ in. 6-30 R. H.
32.	137.	$\frac{3}{16}$ in. 6-30 R. H.
34.	31.	$\frac{1}{4}$ in. 6-30 R. H.
35.	168.	$\frac{7}{32}$ in. 6-30 R. H.
35.	37.	$\frac{5}{16}$ in. 6-30 R. H.
36.	31.	$\frac{1}{4}$ in. 6-30 R. H.

Replaced by . . .

SCREWS TO BE USED IN FUTURE.

No.	Dimensions.	
2005.	1 in. 14-20 R. H.	Nickel.
2006.	$\frac{11}{16}$ in. 10-24 R. H.	"
708.	$\frac{3}{8}$ in. 8-32 R. H.	Brass.
758.	$\frac{1}{4}$ in. 10-24 R. H.	"
2008.	$\frac{5}{8}$ in. 6-30 F. H.	"
1361.	$\frac{3}{4}$ in. 14-20 F. H.	"
1347.	$\frac{1}{2}$ in. 10-24 R. H.	"
2008.	$\frac{5}{8}$ in. 6-30 F. H.	"
823.	$\frac{1}{4}$ in. 6-30 R. H.	"
1479.	$\frac{3}{8}$ in. 6-30 F. H.	"
1382.	$\frac{3}{8}$ in. 10-24 F. H.	"
1361.	$\frac{3}{4}$ in. 14-20 F. H.	"
1400.	$\frac{1}{2}$ in. 14-20 R. H.	"
7043.	$\frac{5}{8}$ in. 10-24 R. H.	"
1351.	$\frac{3}{8}$ in. 6-30 R. H.	"
2009.	$\frac{9}{16}$ in. 10-24 R. H.	"
2000.	$\frac{7}{32}$ in. 6-30 R. H.	Bronze.
2001.	$\frac{5}{16}$ in. 6-30 R. H.	"
2003.	$\frac{1}{4}$ in. 6-30 R. H.	"
2003.	$\frac{1}{4}$ in. 6-30 R. H.	"
1453.	$\frac{3}{16}$ in. 6-30 R. H.	Brass.
2003.	$\frac{1}{4}$ in. 6-30 R. H.	Bronze.
2000.	$\frac{7}{32}$ in. 6-30 R. H.	"
2001.	$\frac{5}{16}$ in. 6-30 R. H.	"
2003.	$\frac{1}{4}$ in. 6-30 R. H.	"

The above is only true for the K lamps, and does not apply to other apparatus in the Catalogue. No screws are to be changed except those given in the above tables.

NEW MACHINE SCREWS FOR M LAMPS.

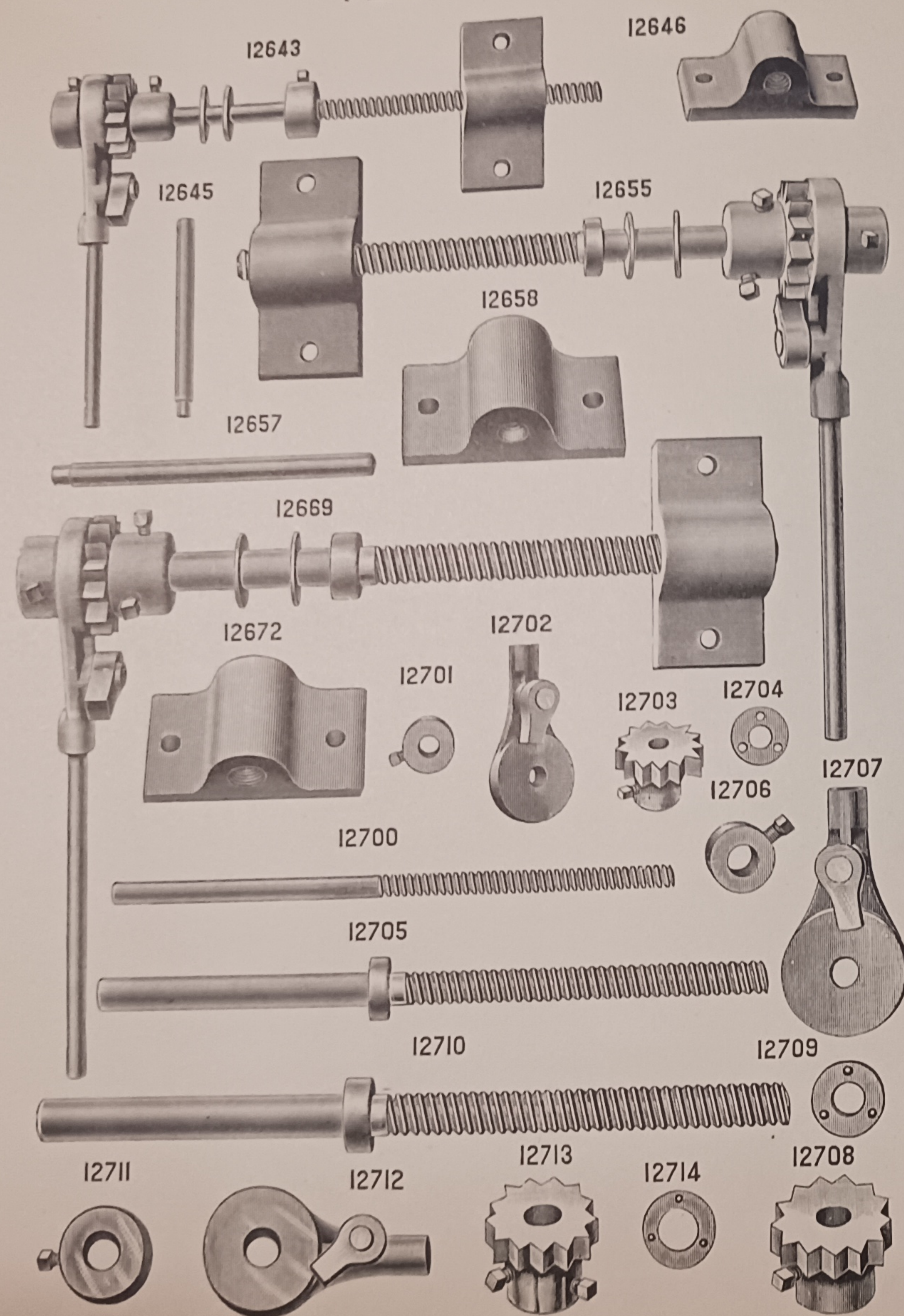
PLEASE INSERT THIS SHEET BETWEEN PAGES 42 AND 43
OF ARC CATALOGUE, EDITION OF DEC. 1, 1890.

In ordering screws for all M lamps use the following table, observing the same directions as given with the table for K lamps.

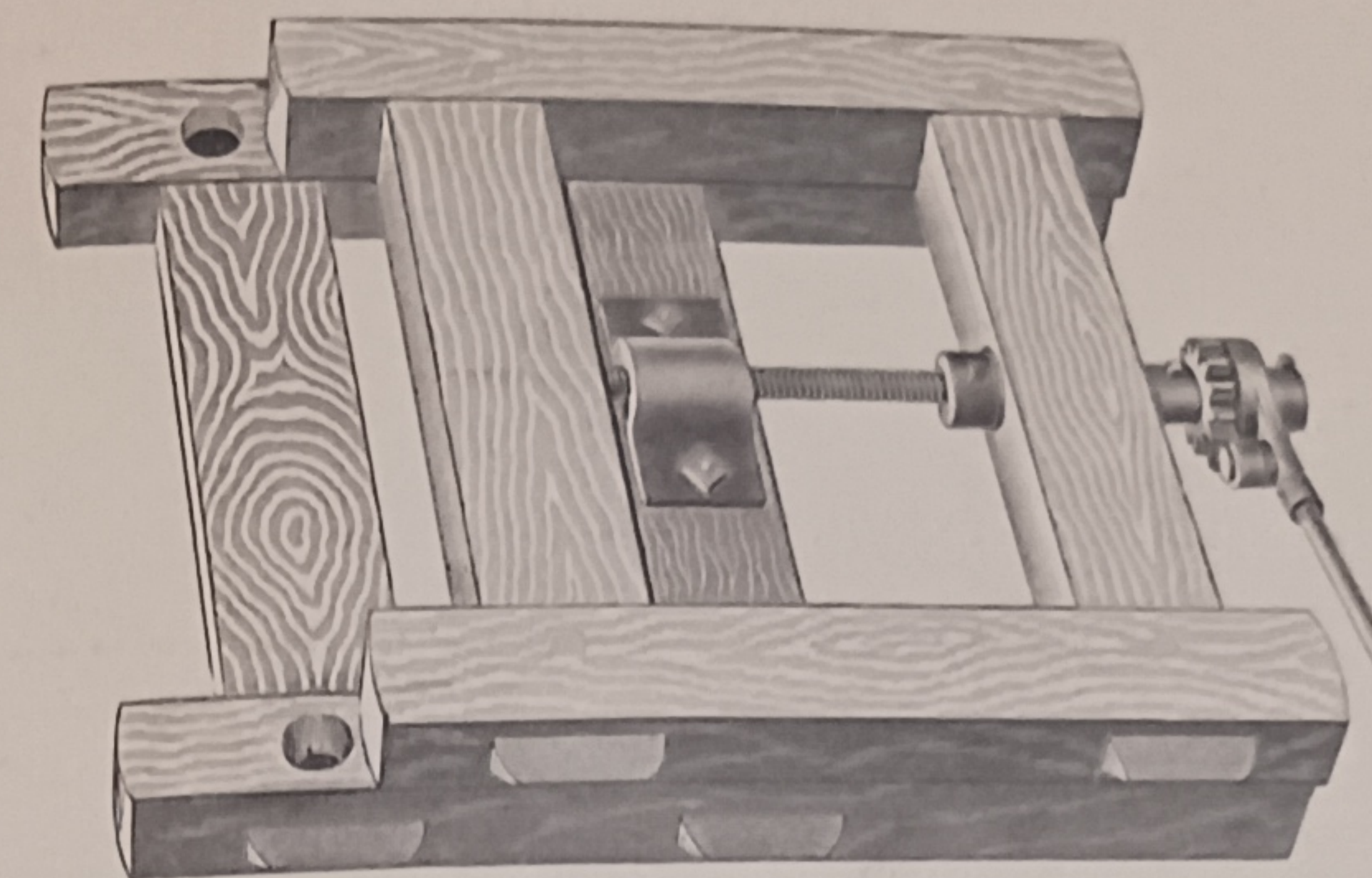
IRON SCREWS FORMERLY USED.			SCREWS TO BE USED IN FUTURE.		
Page.	No.	Dimensions.		No.	Dimensions.
43.	657.	1 in. 14-20 R. H.	Replaced by . . .	2005.	1 in. 14-20 R. H. Nickel.
43.	756.	$\frac{1}{8}$ in. 10-24 R. H.	" " . . .	2006.	$\frac{1}{8}$ in. 10-24 R. H. "
43.	695.	$\frac{1}{2}$ in. 8-32 R. H.	" " . . .	708.	$\frac{3}{8}$ in. 8-32 R. H. Brass.
43.	697.	$\frac{1}{4}$ in. 10-24 R. H.	" " . . .	758.	$\frac{1}{4}$ in. 10-24 R. H. "
45.	721.	$\frac{5}{8}$ in. 6-30 F. H.	" " . . .	2008.	$\frac{5}{8}$ in. 6-30 F. H. "
45.	662.	$\frac{3}{4}$ in. 14-20 F. H.	" " . . .	1361.	$\frac{3}{4}$ in. 14-20 F. H. "
45.	18.	$\frac{1}{2}$ in. 10-24 R. H.	" " . . .	1347.	$\frac{1}{2}$ in. 10-24 R. H. "
46.	721.	$\frac{5}{8}$ in. 6-30 F. H.	" " . . .	2008.	$\frac{5}{8}$ in. 6-30 F. H. "
46.	18.	$\frac{1}{2}$ in. 10-24 R. H.	" " . . .	1347.	$\frac{1}{2}$ in. 10-24 R. H. "
46.	31.	$\frac{1}{4}$ in. 6-30 R. H.	" " . . .	823.	$\frac{1}{4}$ in. 6-30 R. H. "
47.	737.	$\frac{3}{8}$ in. 6-30 F. H.	" " . . .	1479.	$\frac{3}{8}$ in. 6-30 F. H. "
47.	664.	$\frac{3}{8}$ in. 10-24 F. H.	" " . . .	1382.	$\frac{3}{8}$ in. 10-24 F. H. "
47.	662.	$\frac{3}{4}$ in. 14-20 F. H.	" " . . .	1361.	$\frac{3}{4}$ in. 14-20 F. H. "
47.	3.	$\frac{1}{2}$ in. 14-20 R. H.	" " . . .	1406.	$\frac{1}{2}$ in. 14-20 R. H. "
48.	98.	$\frac{5}{8}$ in. 10-24 R. H.	" " . . .	7043.	$\frac{5}{8}$ in. 10-24 R. H. "
48.	14.	$\frac{3}{8}$ in. 6-30 R. H.	" " . . .	1351.	$\frac{3}{8}$ in. 6-30 R. H. "
48.	18.	$\frac{1}{2}$ in. 10-24 R. H.	" " . . .	2009.	$\frac{1}{2}$ in. 10-24 R. H. "
49.	168.	$\frac{7}{8}$ in. 6-30 R. H.	" " . . .	2000.	$\frac{7}{8}$ in. 6-30 R. H. Bronze.
49.	37.	$\frac{1}{8}$ in. 6-30 R. H.	" " . . .	2001.	$\frac{1}{8}$ in. 6-30 R. H. "
49.	137.	$\frac{1}{8}$ in. 6-30 R. H.	" " . . .	1453.	$\frac{1}{8}$ in. 6-30 R. H. "
50.	31.	$\frac{1}{4}$ in. 6-30 R. H.	" " . . .	2003.	$\frac{1}{4}$ in. 6-30 R. H. "
50.	795.	$\frac{1}{2}$ in. 6-30 R. H.	" " . . .	2010.	$\frac{1}{2}$ in. 6-30 R. H. "
51.	31.	$\frac{1}{4}$ in. 6-30 R. H.	" " . . .	2003.	$\frac{1}{4}$ in. 6-30 R. H. "
51.	795.	$\frac{1}{2}$ in. 6-30 R. H.	" " . . .	2010.	$\frac{1}{2}$ in. 6-30 R. H. "

The above is only true for the M lamps, and does not apply to other apparatus in the Catalogue. No screws are to be changed except those given in the above tables.

PLATE XLIII.



(12)



Dynamo Bases.

No. 1291. BASE FOR C DYNAMO, complete, with ratchet.

The following are the interchangeable parts of No. 1291.

Plate.	No.	Description.
	1900.	Base, without ratchet.
XLIII.	12643.	Ratchet, complete.
	12644.	Ratchet body. (Includes all parts except handle and nut.)
XLIII.	12700.	Screw.
XLIII.	12701.	Collar, with set screw.
XLIII.	12702.	Lever, with pawl.
XLIII.	12703.	Ratchet wheel, with set screw.
XLIII.	12704.	Washer, drilled and countersunk.
XLIII.	12645.	Handle.
XLIII.	12646.	Nut.

No. 1292. BASE FOR E DYNAMO, complete, with ratchet.

The following are the interchangeable parts of No. 1292.

Plate.	No.	Description.
	1901.	Base, without ratchet.
XLIII.	12655.	Ratchet, complete.
	12656.	Ratchet body. (Includes all parts except handle and nut.)
XLIII.	12705.	Screw.
XLIII.	12706.	Collar, with set screw.
XLIII.	12707.	Lever, with pawl.

Bases. — Concluded.

Plate.	No.	
XLIII.	12708.	Ratchet wheel, with set screw.
XLIII.	12709.	Washer, drilled and countersunk.
XLIII.	12657.	Handle.
XLIII.	12658.	Nut.

No. 1293. BASE FOR H DYNAMO, complete, with ratchet.

The interchangeable parts of No. 1293 are the same as of No. 1292, with the following exception:—

Plate.	No.	
	1902.	Base, without ratchet.

No. 1294. BASE FOR K DYNAMO, complete, with ratchet.

The interchangeable parts of No. 1294 are the same as of No. 1292, with the following exception:—

Plate.	No.	
	1903.	Base, without ratchet.

No. 1295. BASE FOR L, LD, M AND MD DYNAMOS, complete, with ratchet.

Plate.	No.	
	1904.	Base, without ratchet.
XLIII.	12669.	Ratchet, complete.
	12670.	Ratchet body.
XLIII.	12710.	Screw.
XLIII.	12711.	Collar, with set screw.
XLIII.	12712.	Lever, with pawl.
XLIII.	12713.	Ratchet wheel, with set screw.
XLIII.	12714.	Washer, drilled and countersunk.
XLIII.	12671.	Handle.
XLIII.	12672.	Nut.

No. 1296. BASE FOR P DYNAMO, complete, with ratchet.

The interchangeable parts of No. 1296 are the same as of No. 1295, with the following exception:—

Plate.	No.	
	1905.	Base, without ratchet.

The complete bases are catalogued on page 180, of the Arc Catalogue.

PLATE XLIV.

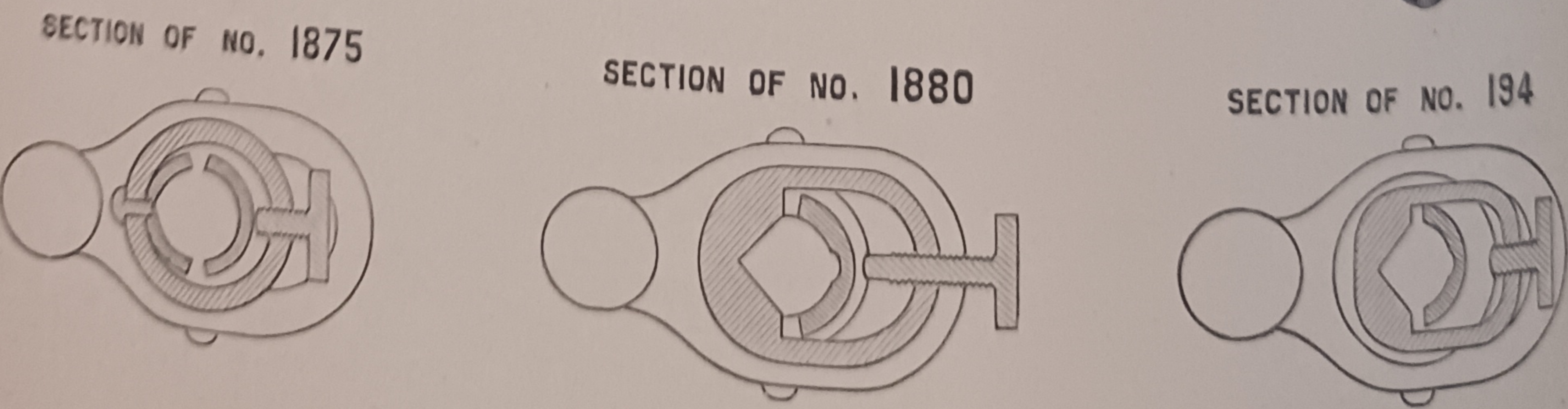
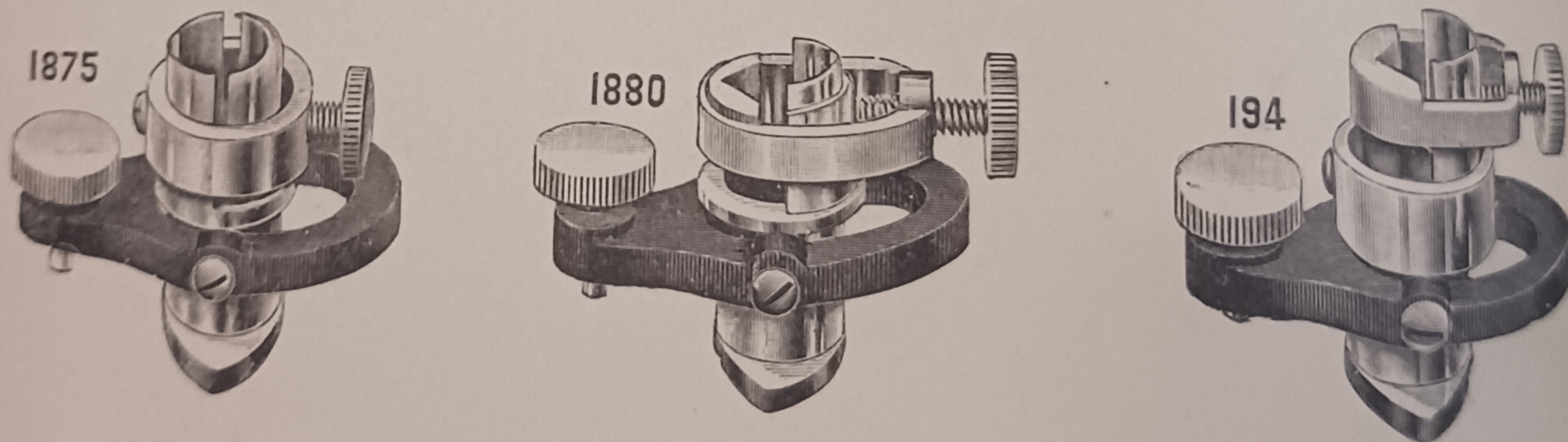
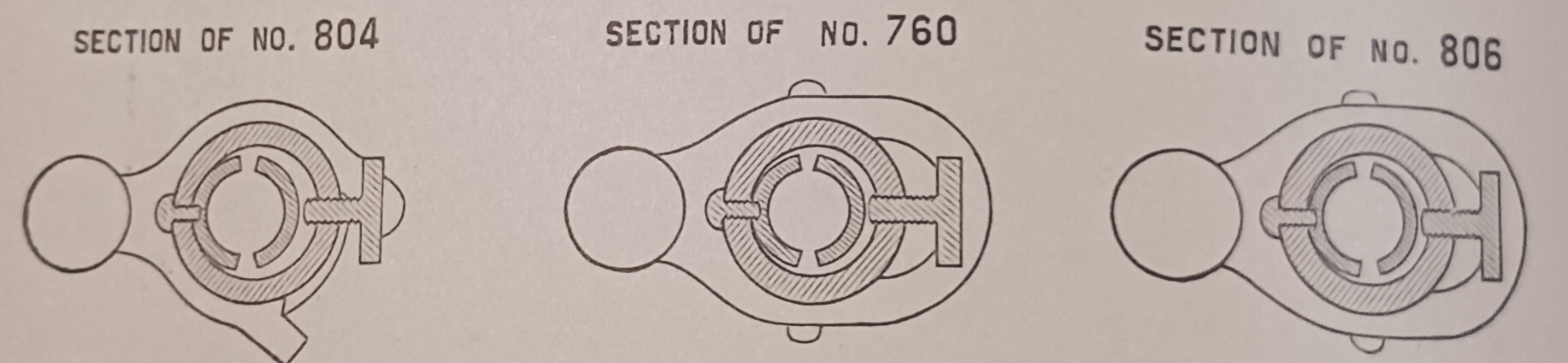
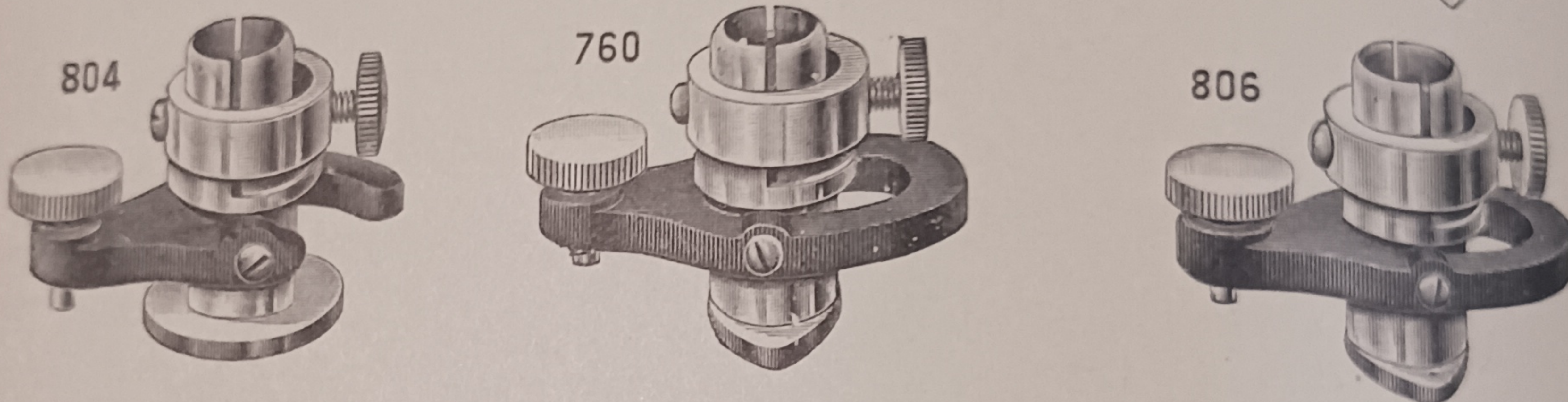
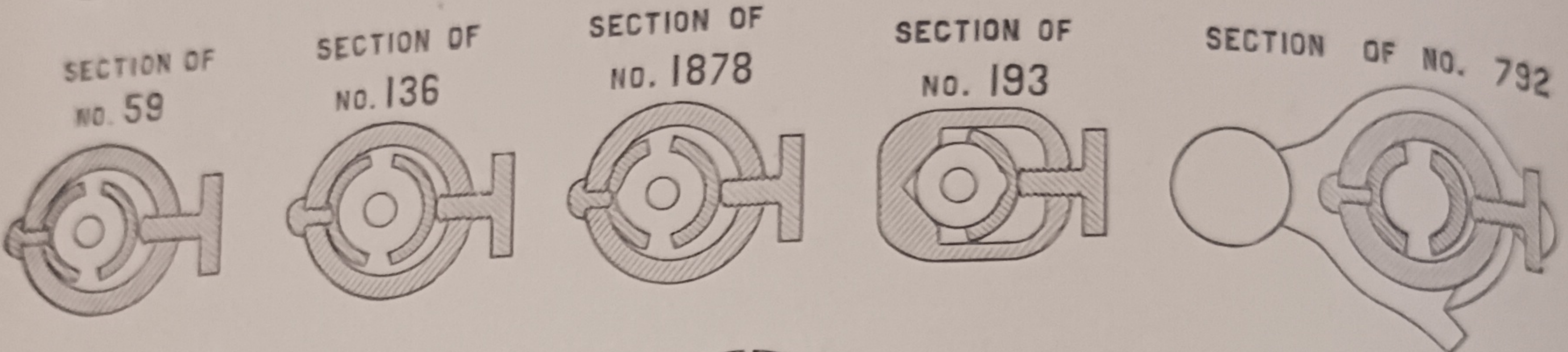
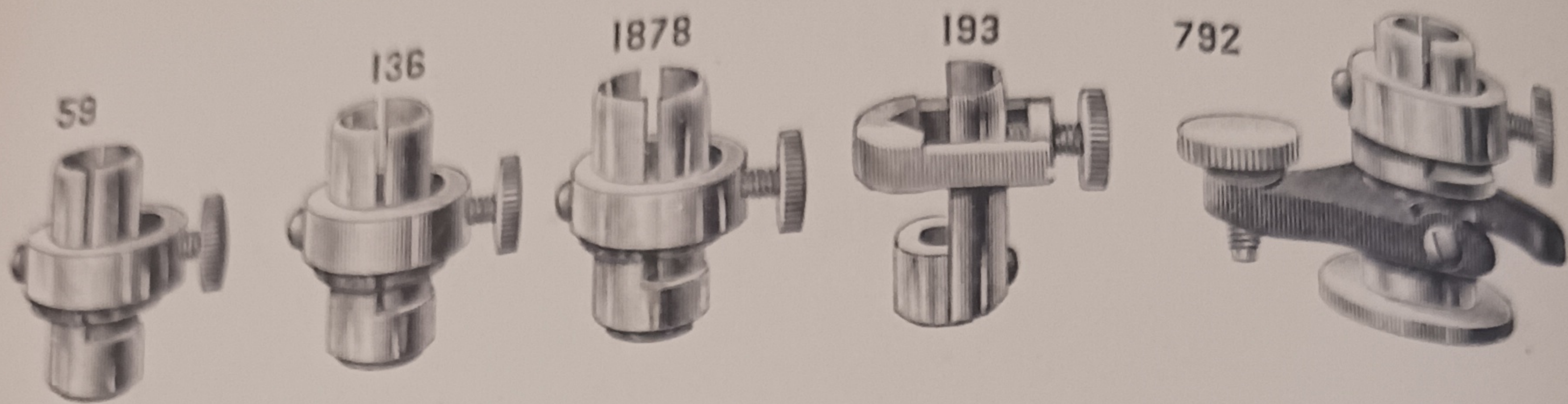
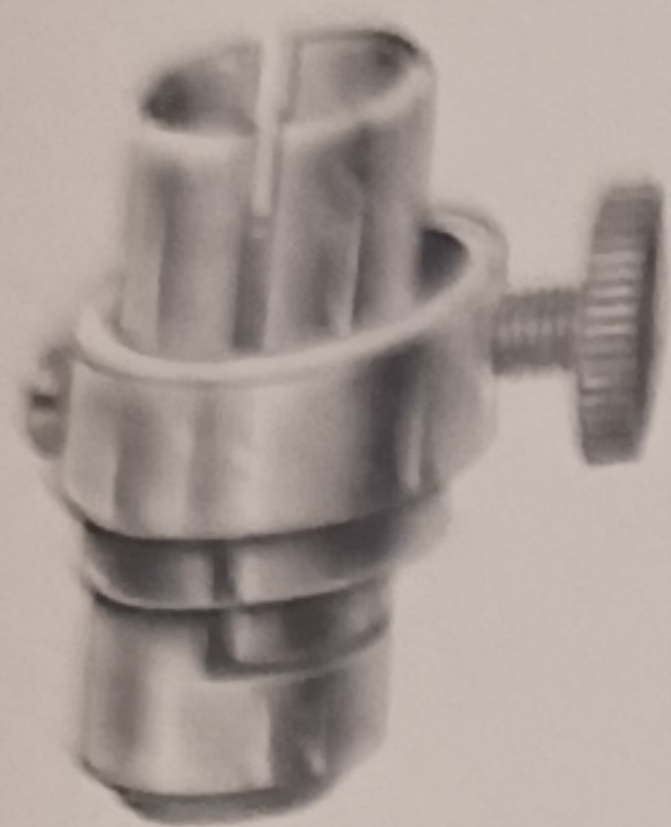
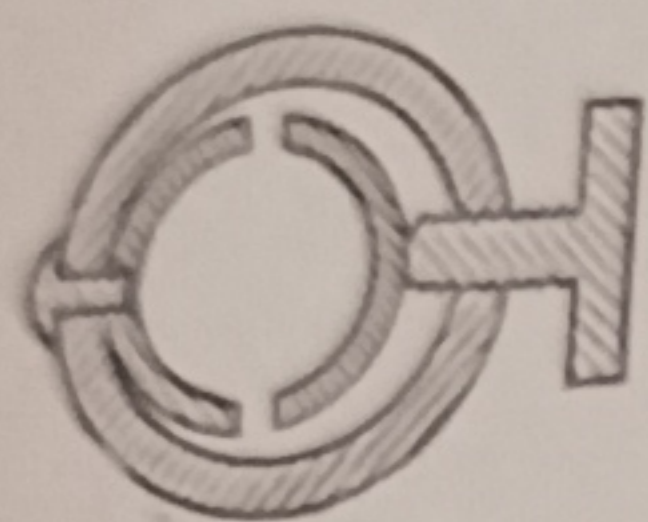


PLATE XLV.

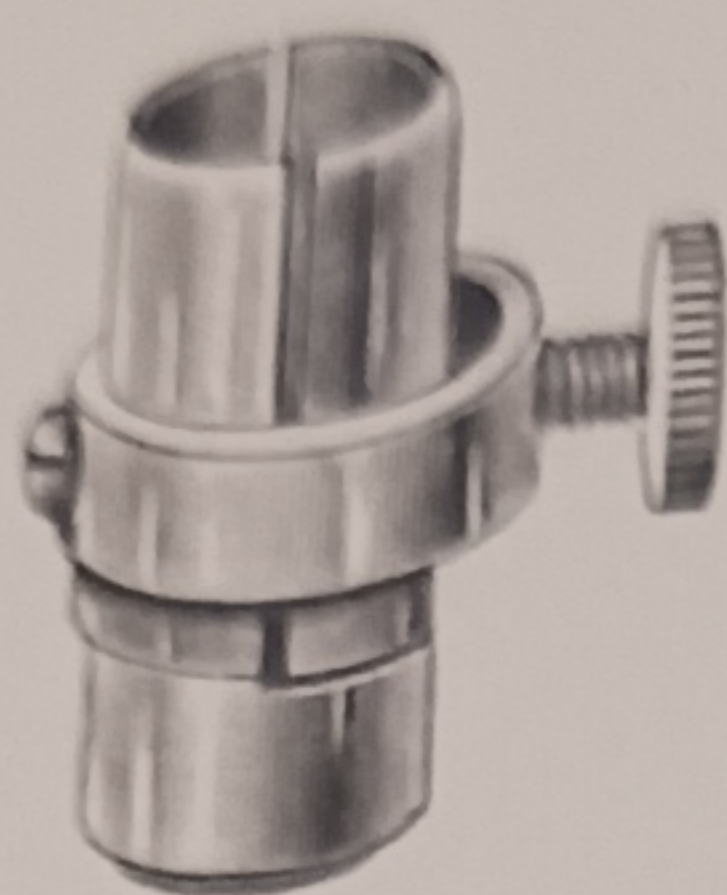
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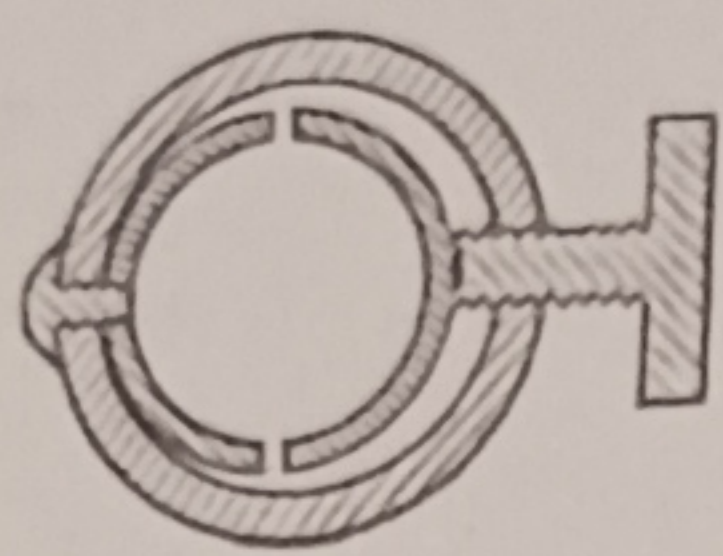
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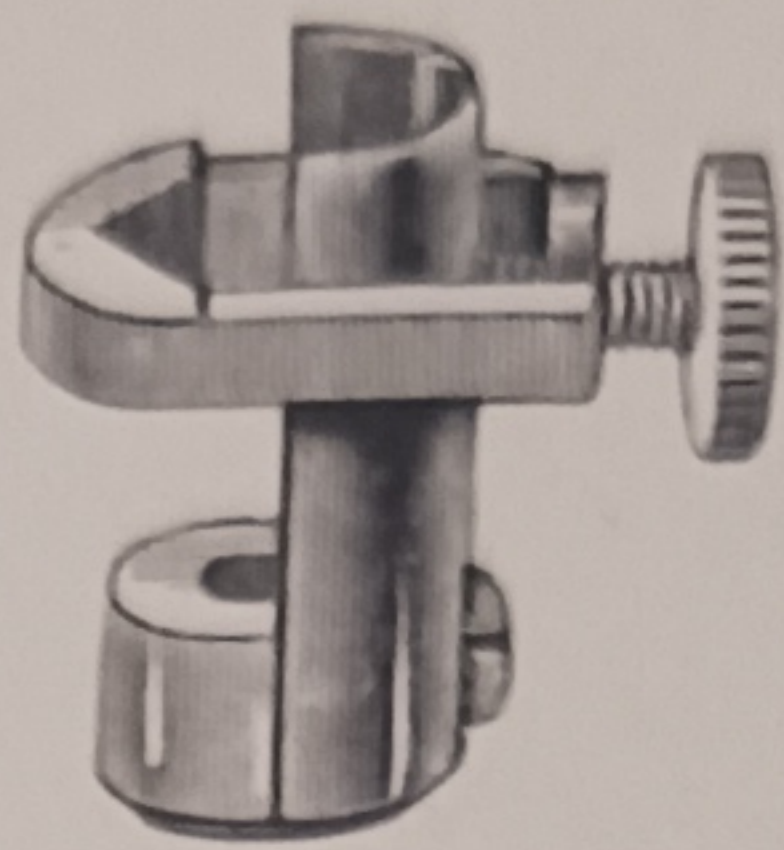
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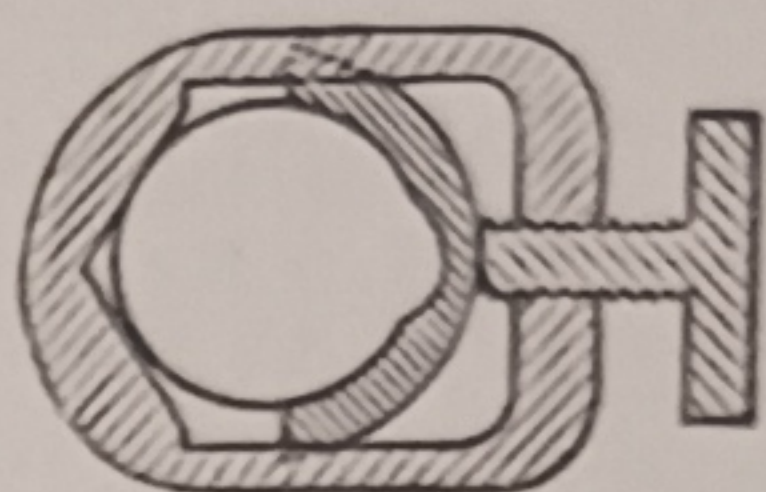
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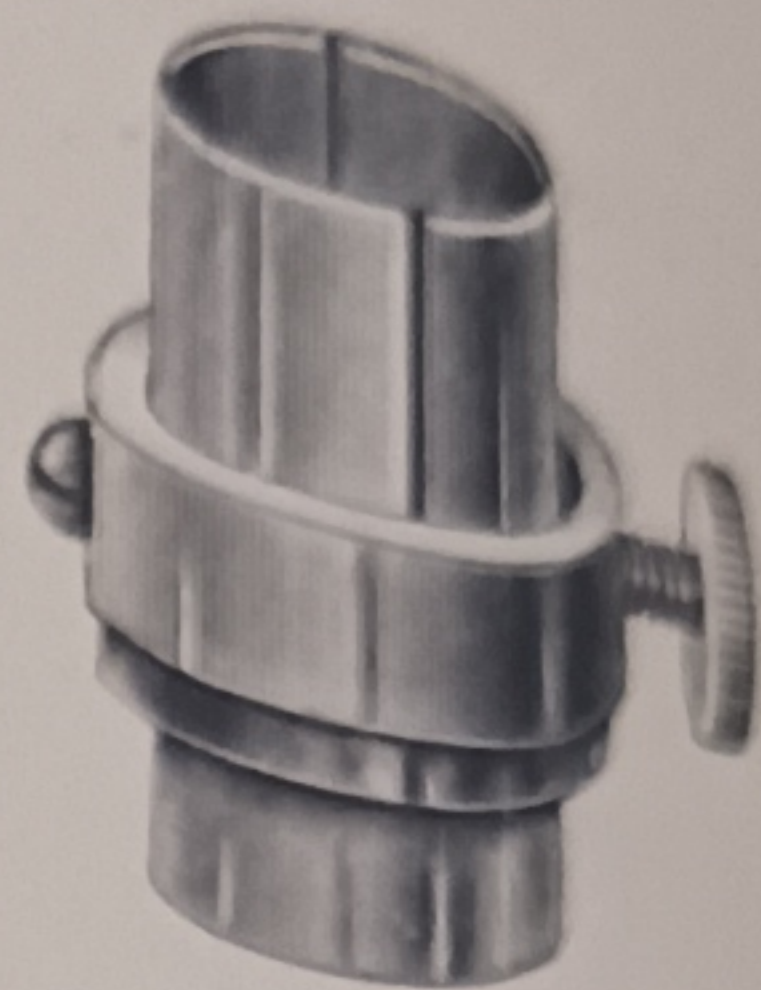
1885



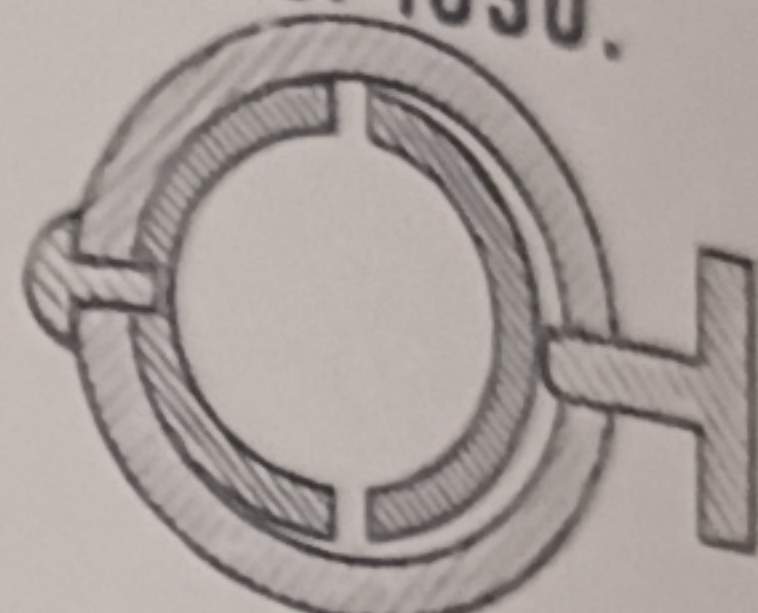
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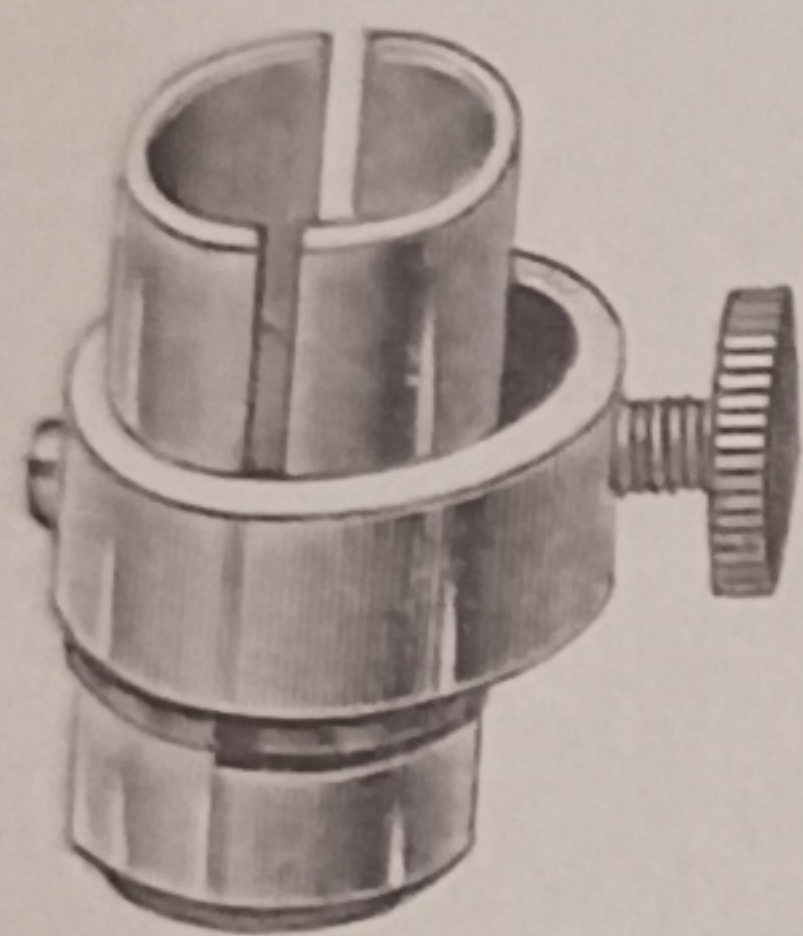
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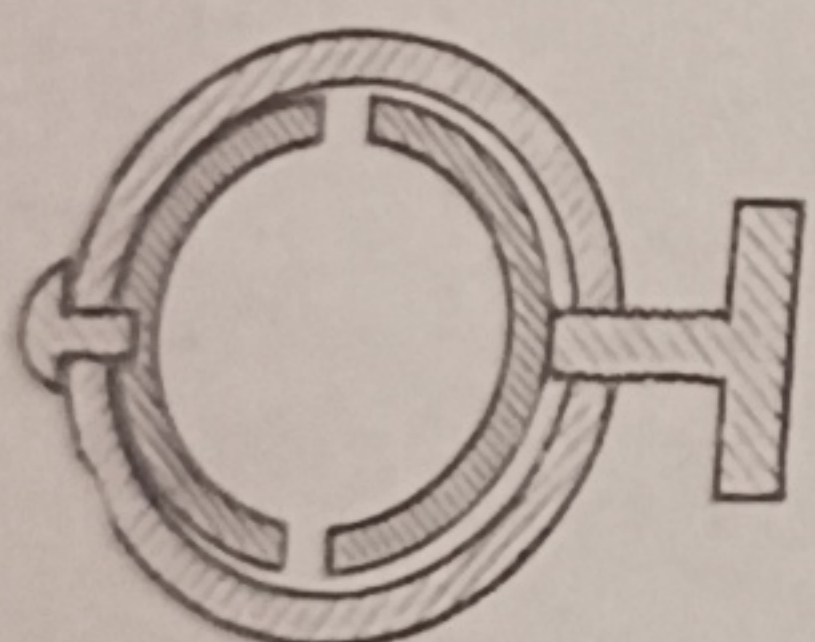
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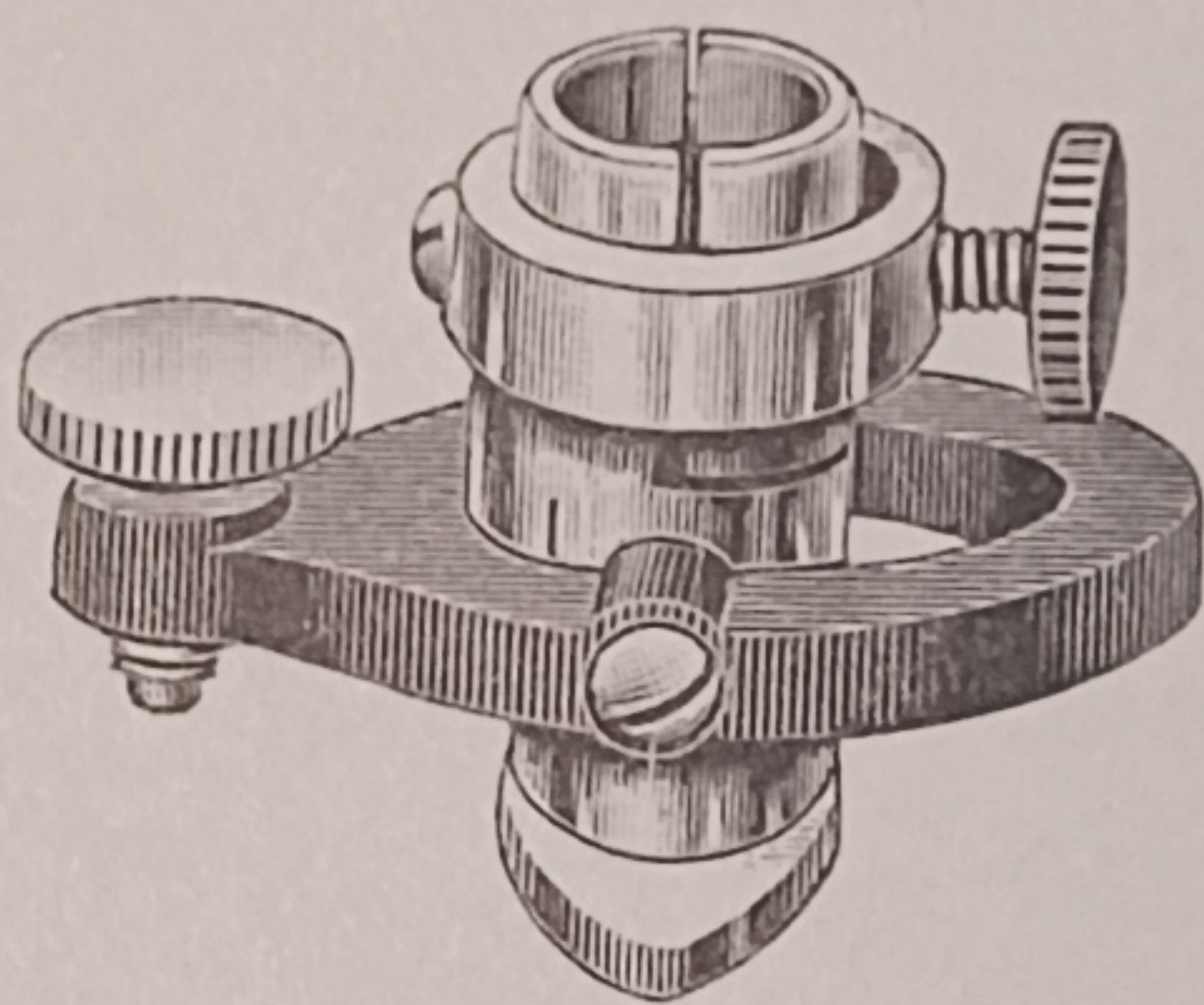
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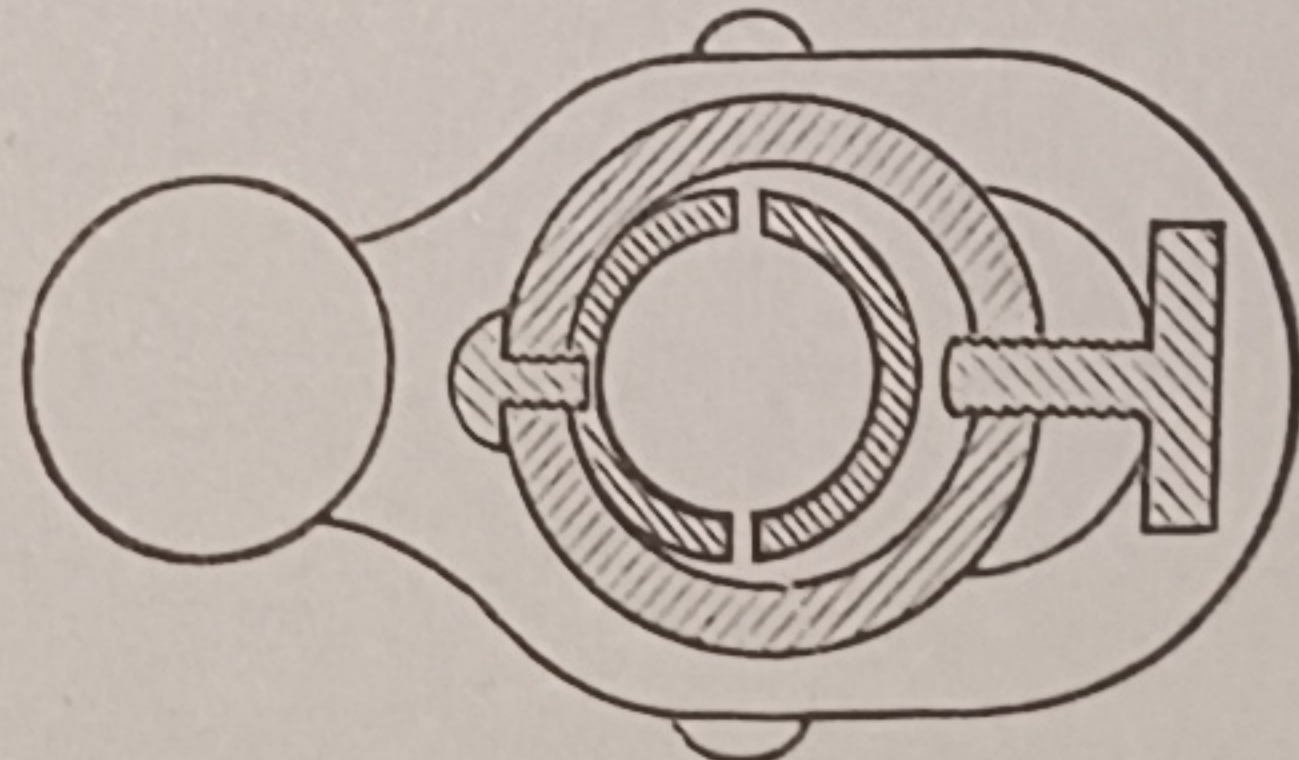
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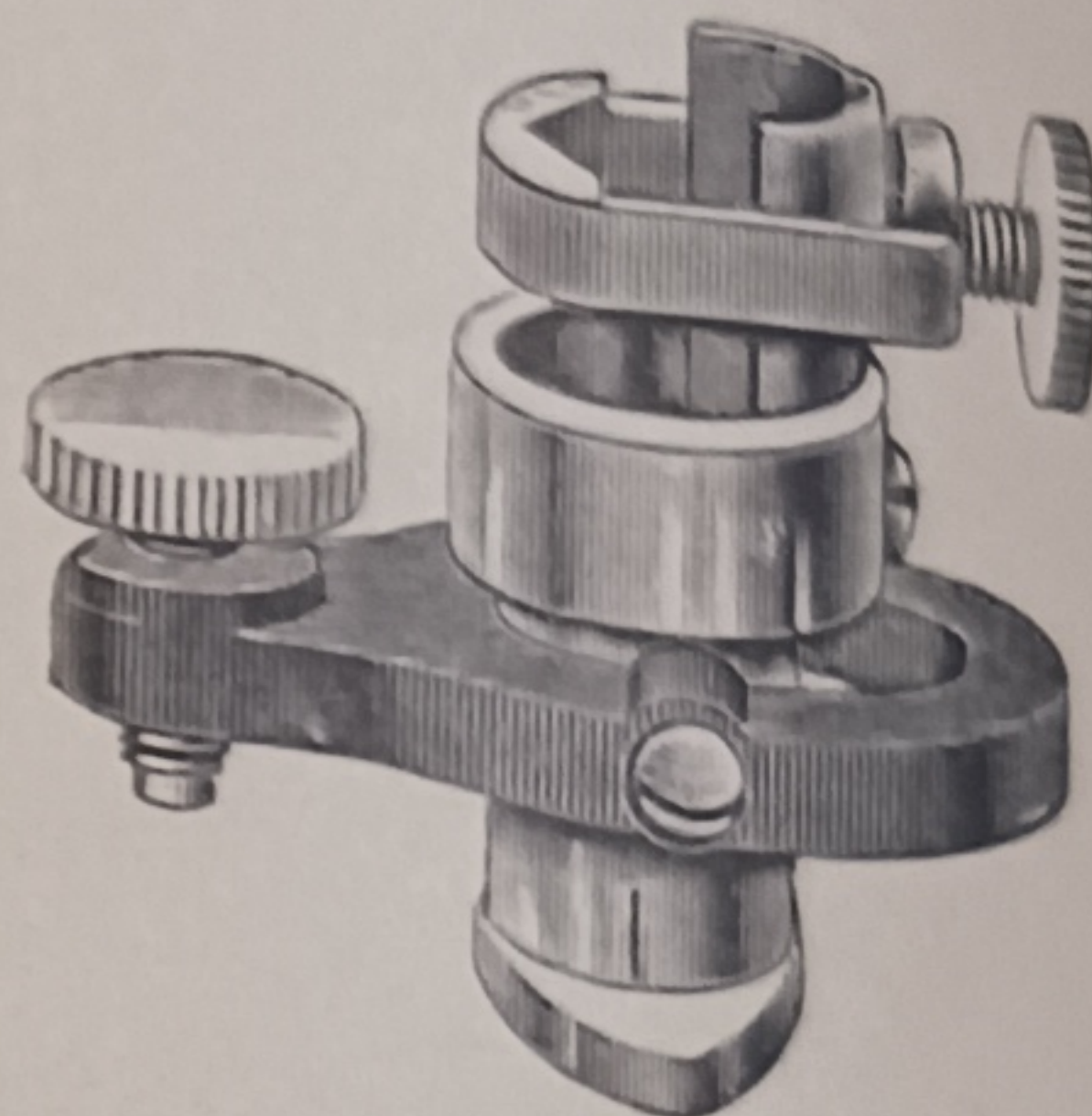
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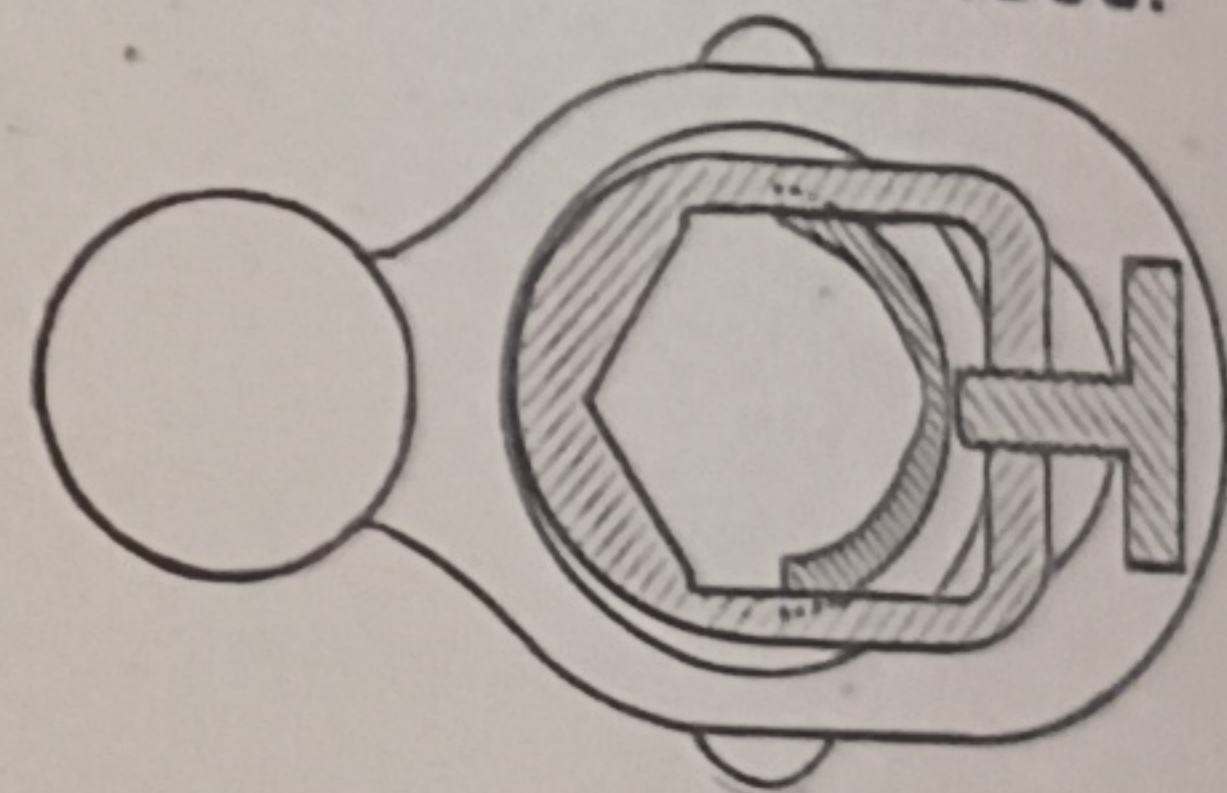
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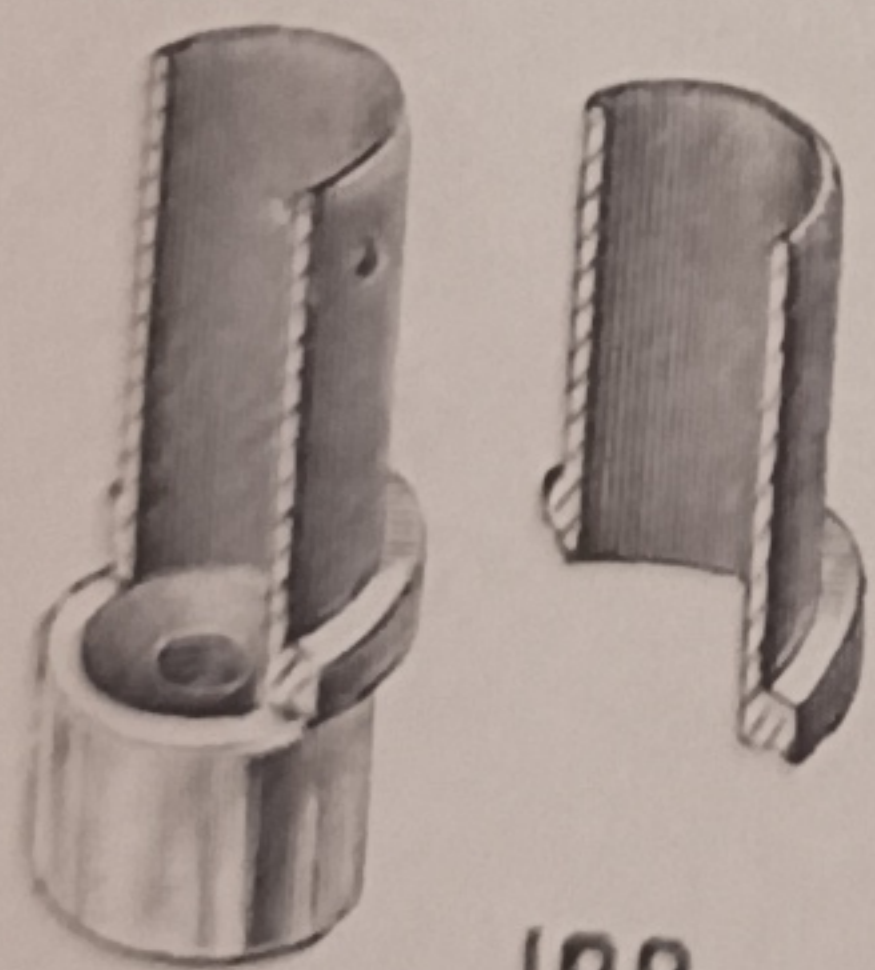
1886



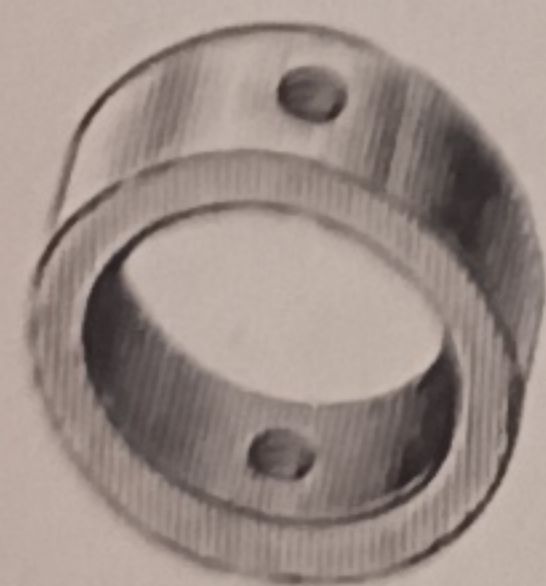
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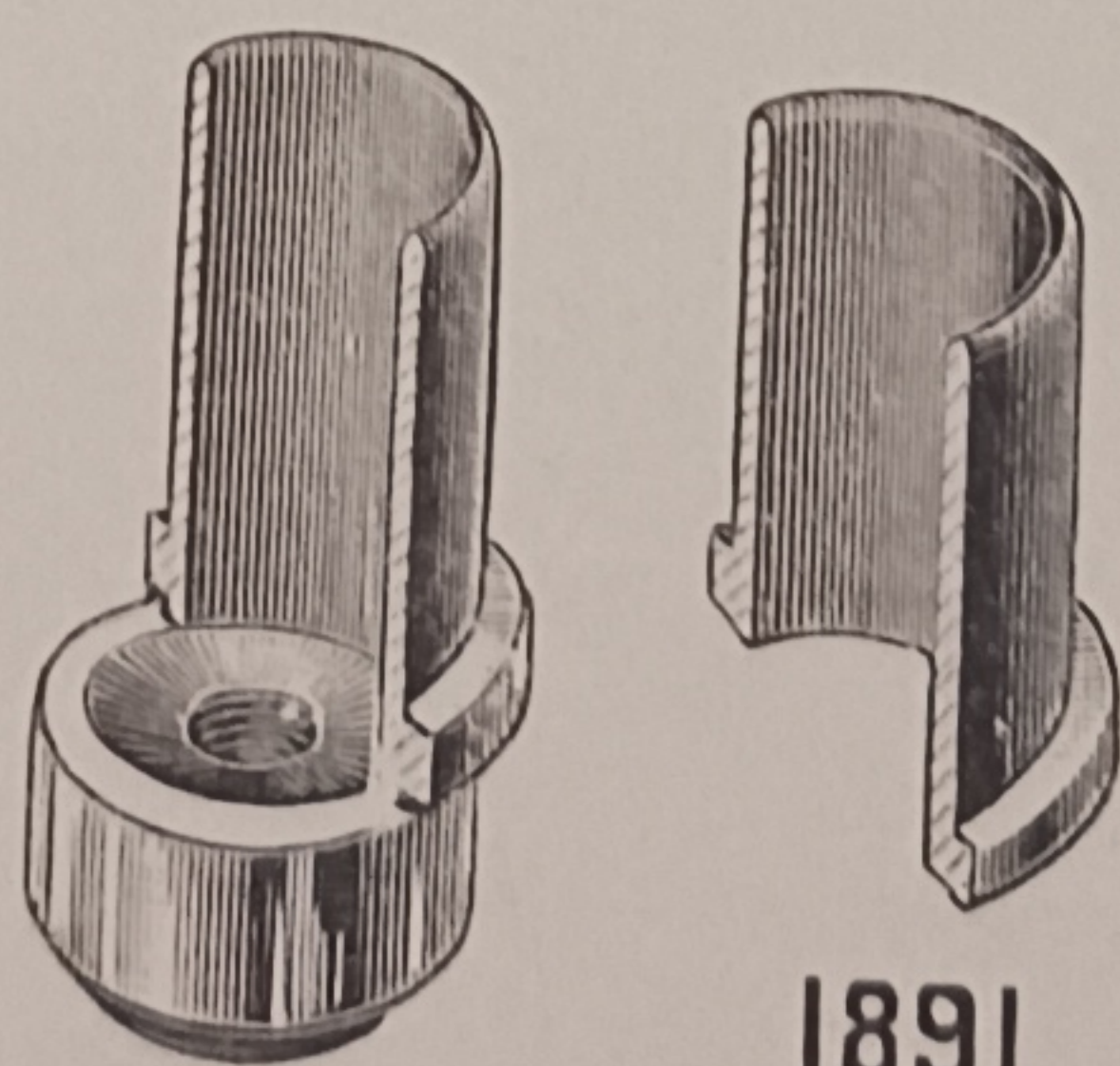
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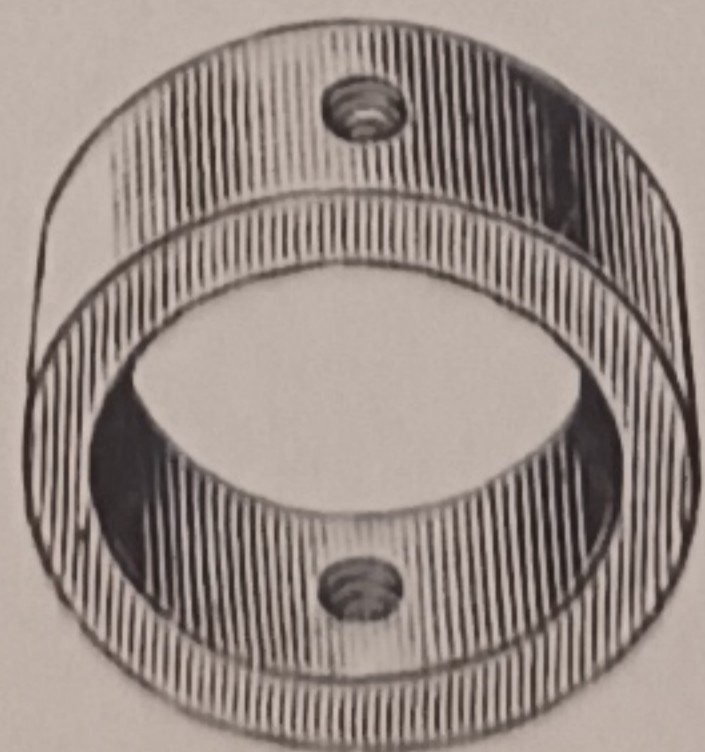
198



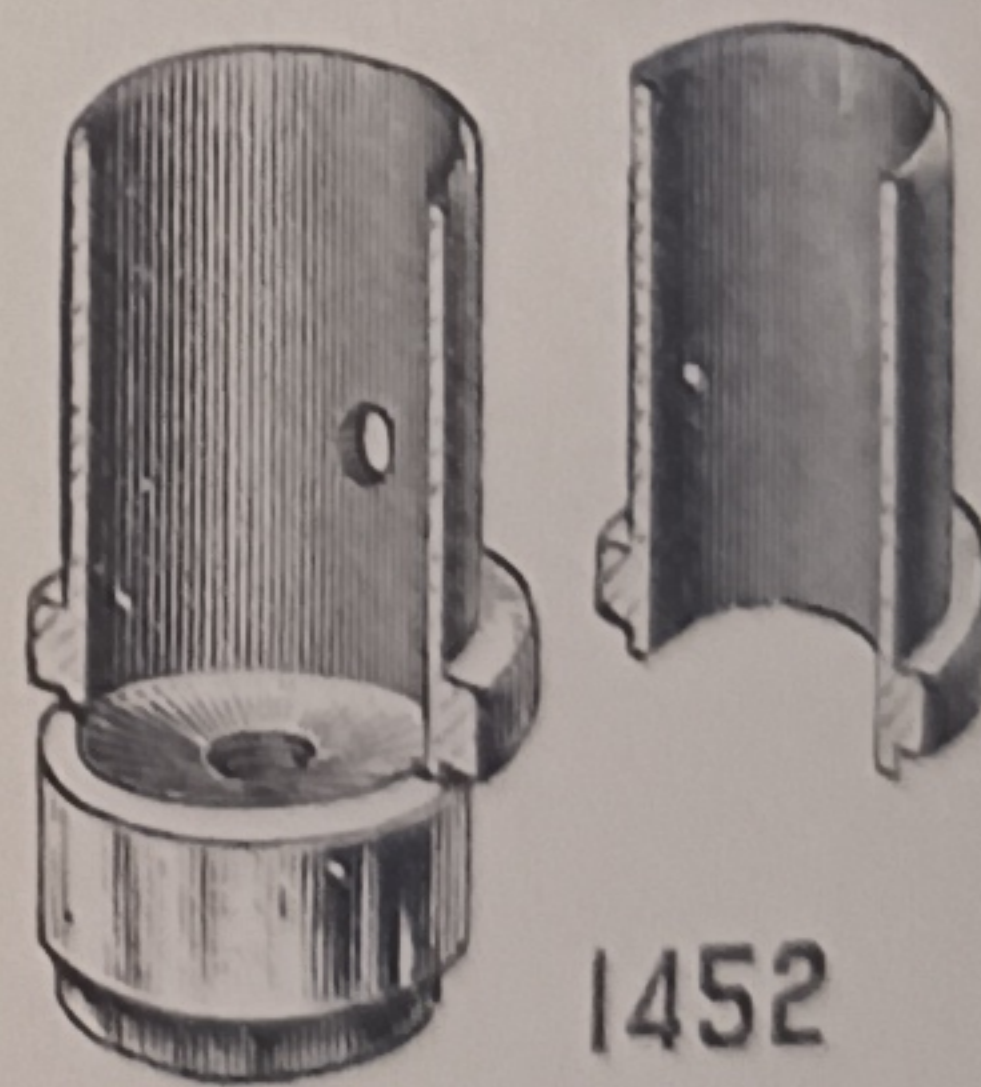
1892



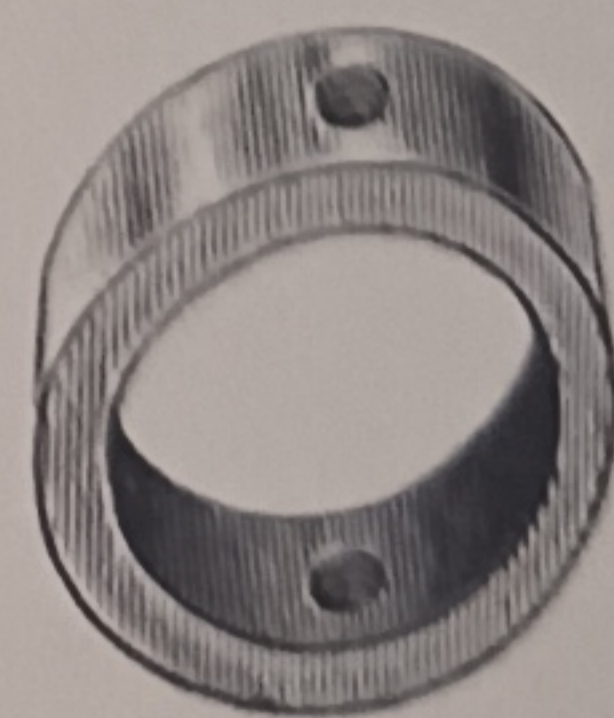
1891



1450



1452



621.32

M. L. G. Schickel
1-28-39

The Only Automatic Self-Regulating System
of Arc Lighting in the World.

The
Thomson-Houston
Electric Light Company

OFFICE AND FACTORY:
1110-1116 Noble Street, Philadelphia.

621.32
E1252
123318

Pamphlet #4

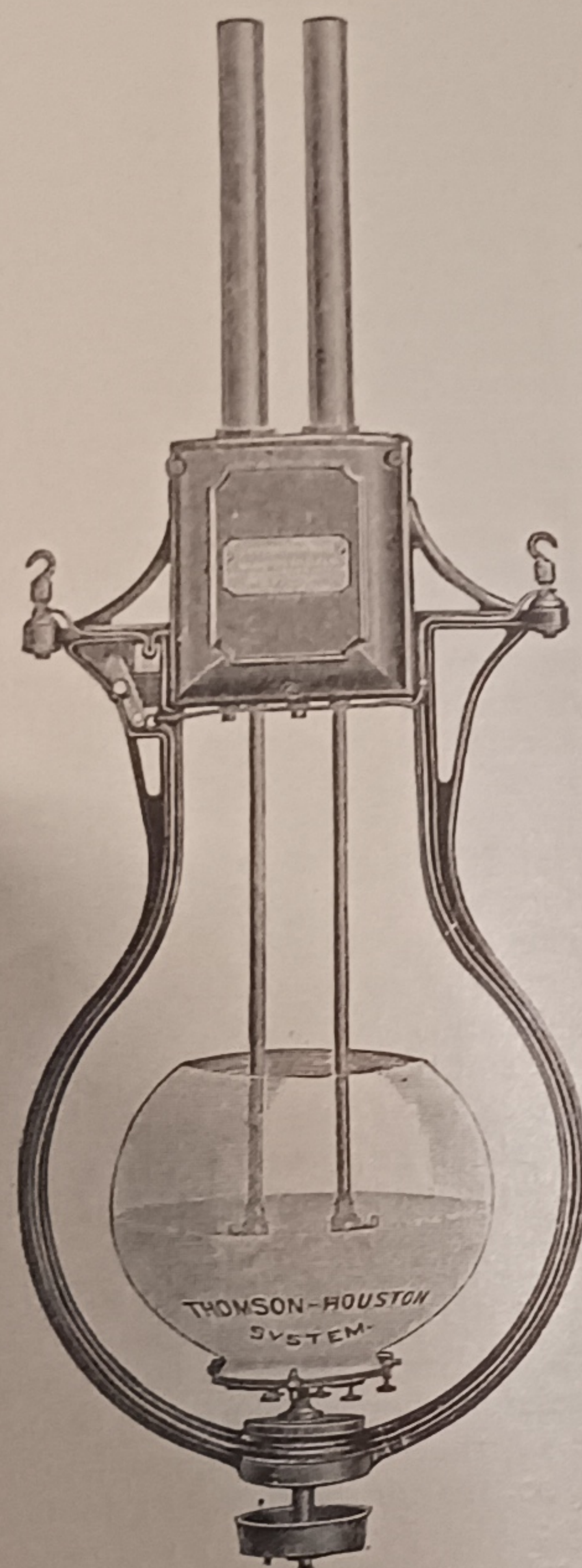


FIG. 20.

Importance of the Automatic Current Regulator.

In situations where it is desired to economize motive power, and when more lights are required at some hours of the day or portions of the year than at others, it becomes important not to be compelled at all times to burn all the lights which a generator can supply, but to be able to extinguish those lights not needed, and thus save to power and carbons in proportion to the number of unused lamps.

It is essential, also, that the accidental extinguishment of some of the lamps, or the partial short-circuiting of the circuit wires by accident, should not result in burning the armature or commutator, thus requiring its renewal at considerable expense.

Generators have frequently been seriously damaged from such cause when no automatic regulation has been provided.

Another point of great importance to the purchaser is that the system should be so perfect that the quantity and steadiness of light furnished will be unaffected by increase of speed or changes in the motive power, so as not to prevent coupling the generator to the ordinary engine or water-power driving the other machinery of a mill.

This perfection is attained only with the Thomson-Houston regulator.

It is, of course, preferable to drive the lighting machinery by special power, but it should not be essential to devote a special engine exclusively to this purpose. Where a very large number of lights are to be worked, special power is, of course, always advantageous.

As a remarkable instance of variations of speed not being fatal to success with the Thomson-Houston system, it may be mentioned that a Thomson self-regulating generator has been placed in a mill upon power giving variations of speed from 900 revolutions to 1,300 revolutions at short intervals, and the lights were of uniform steadiness and brilliancy at all times, and were accepted as perfectly satisfactory by the purchasers.

To users of electric machinery in towns and cities a great saving is effected by permitting the consumer to shut off his light when



FIG. 21.

In the normal position of the brushes a small spark is produced at the ends of the commutator segments, against which the brushes are directed preventing any injurious action on the commutator. The blower which furnishes the puffs of air is illustrated in Fig. 18, which shows a transverse section of it. The

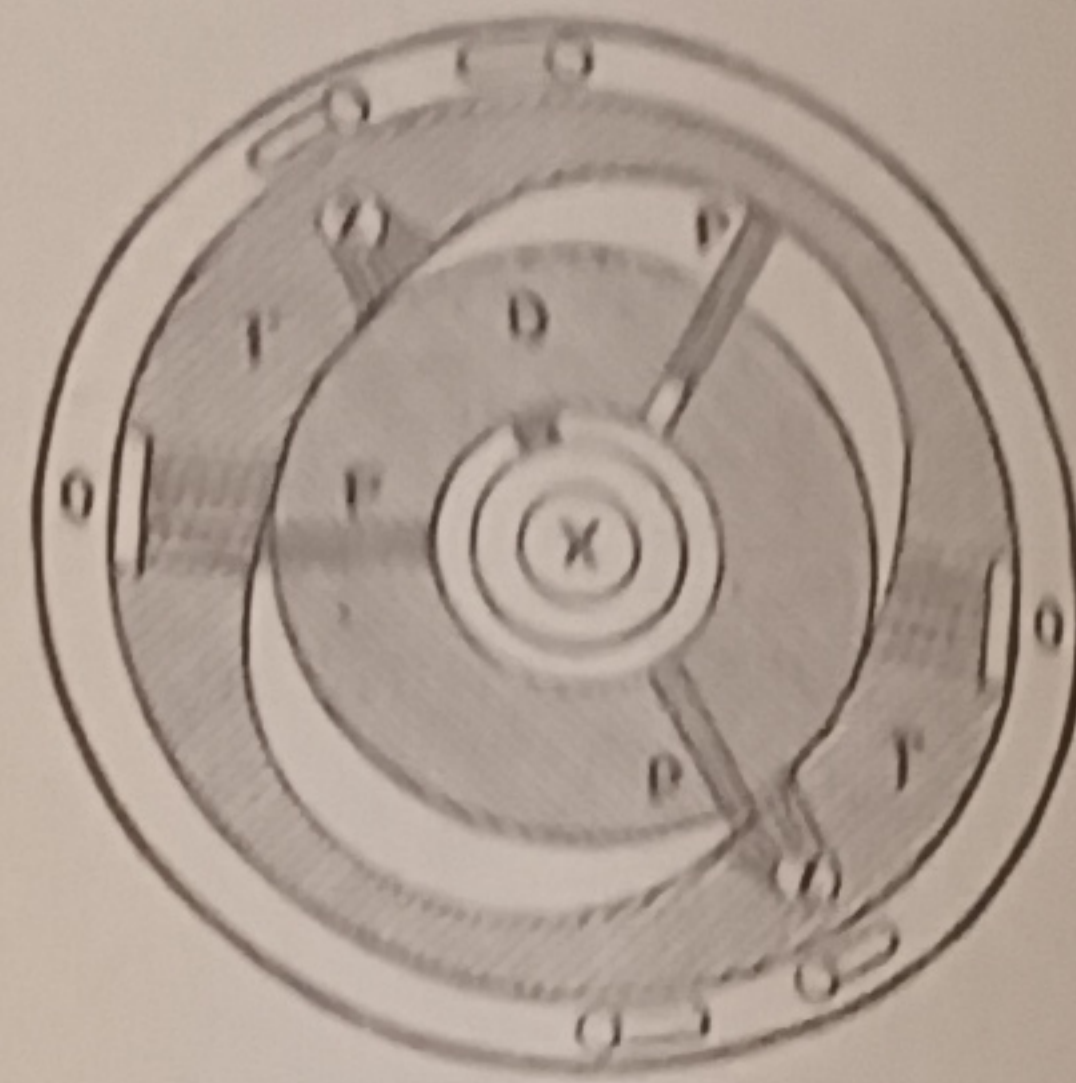


FIG. 18.

mounted on the shaft *X* and revolves in the centre of an oblong chamber contained in the piece *Z*, which is supported in the frame of the machine. The hub has three radial slots in which the wings of hard rubber *P P P* slide freely. During the revolution of the axis the wings are kept against the sides of the oblong chamber and push the air before them, acting in the manner as a rotary air-blower; *O O* are the air inlets and *Z* are the outlets which are connected to the nozzles above the commutator. The inlets are covered with wire gauze to prevent the entrance of dust particles, and the hub *D* is fixed on the shaft in such a position that the jet of air shall be strongest at the time in which the edges of the commutator pass under the brushes.

Special Features of the Thomson-Houston Arc Lamp.

The peculiar mechanism of this lamp, combining a number of unique mechanical adaptations, accomplishes a result in the regulation of carbons for light without the use of clock-work or dash-pots with liquids, as oils and glycerine, liable to be spilled when the lamp is inverted or turned on its side. The feeding of the carbons is effected in a gradual way, and the light is automatically extinguished when the carbons are completely burned, thus preventing injury to the carbon-holders. Lamps used upon long circuits are supplied with an automatic safety circuit preserving device, acting only in case of accident to its particular lamp.

Hand switches are provided to extinguish and relight the lamps.

The lamps are adjusted to give an arc of such length as has been found in practice to yield the largest amount of light for the least expenditure of power, there being a considerable separation or space between the ends of carbons of the lamps.

The character, color, and steadiness of the light are unequalled.

The different styles of lamps are represented herewith, Fig. 19 being that of the standard single lamp, Fig. 20, that of the standard double lamp; Fig. 21 is that of the ornamental lamp. All of these can be made of any desired candle power, although those of 2000 C. P. and 1200 C. P. are the ones most frequently used.

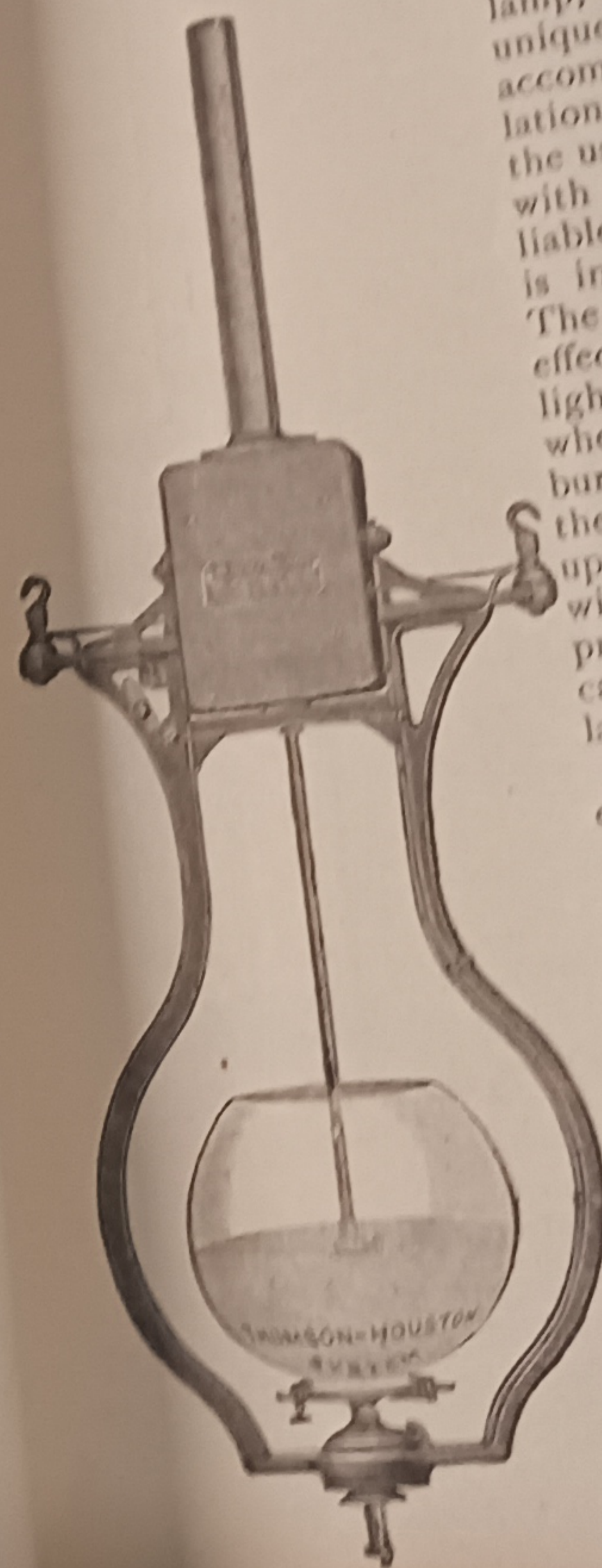


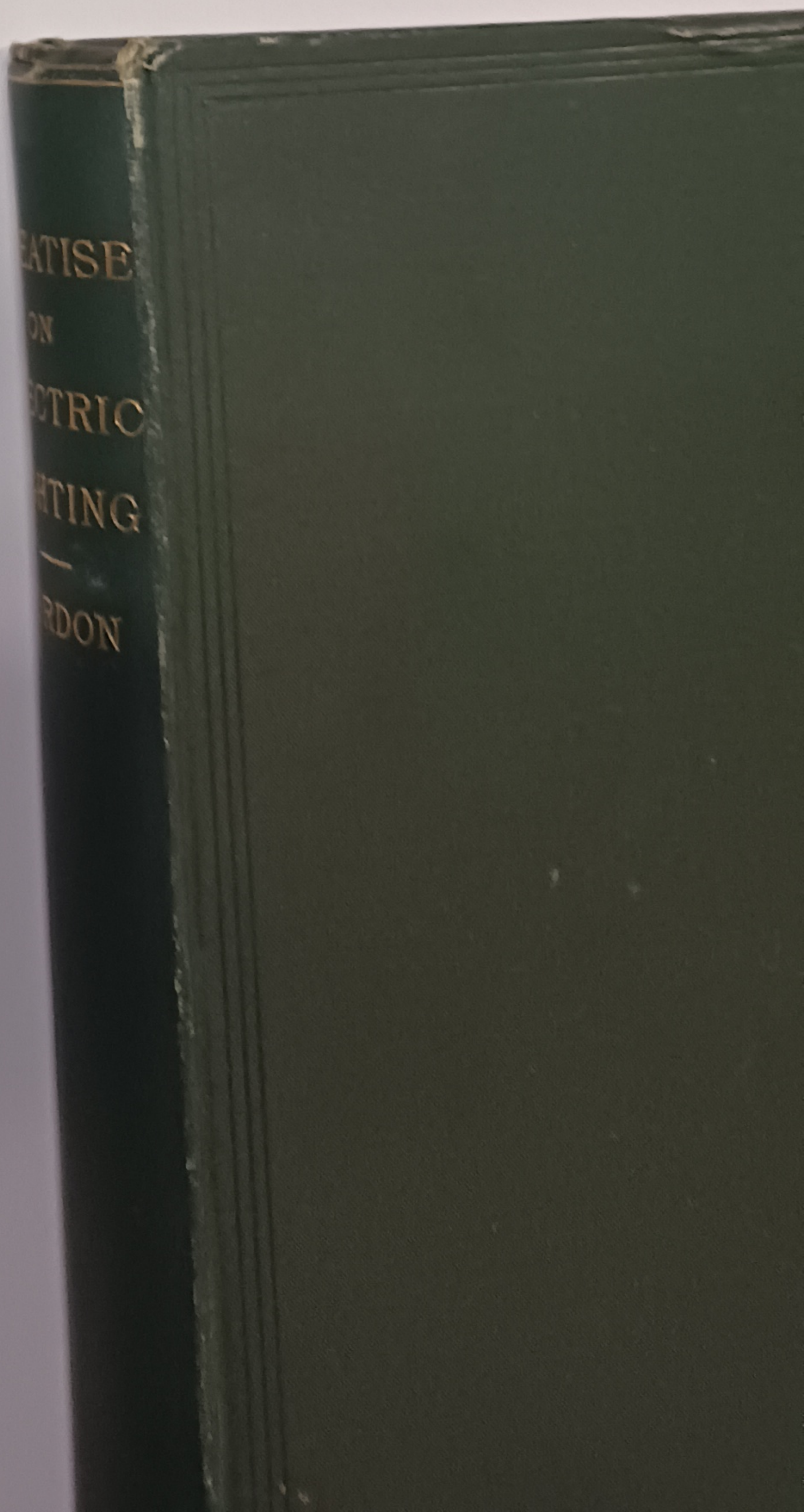
FIG. 19.

1200 C. P. are the ones most frequently used.

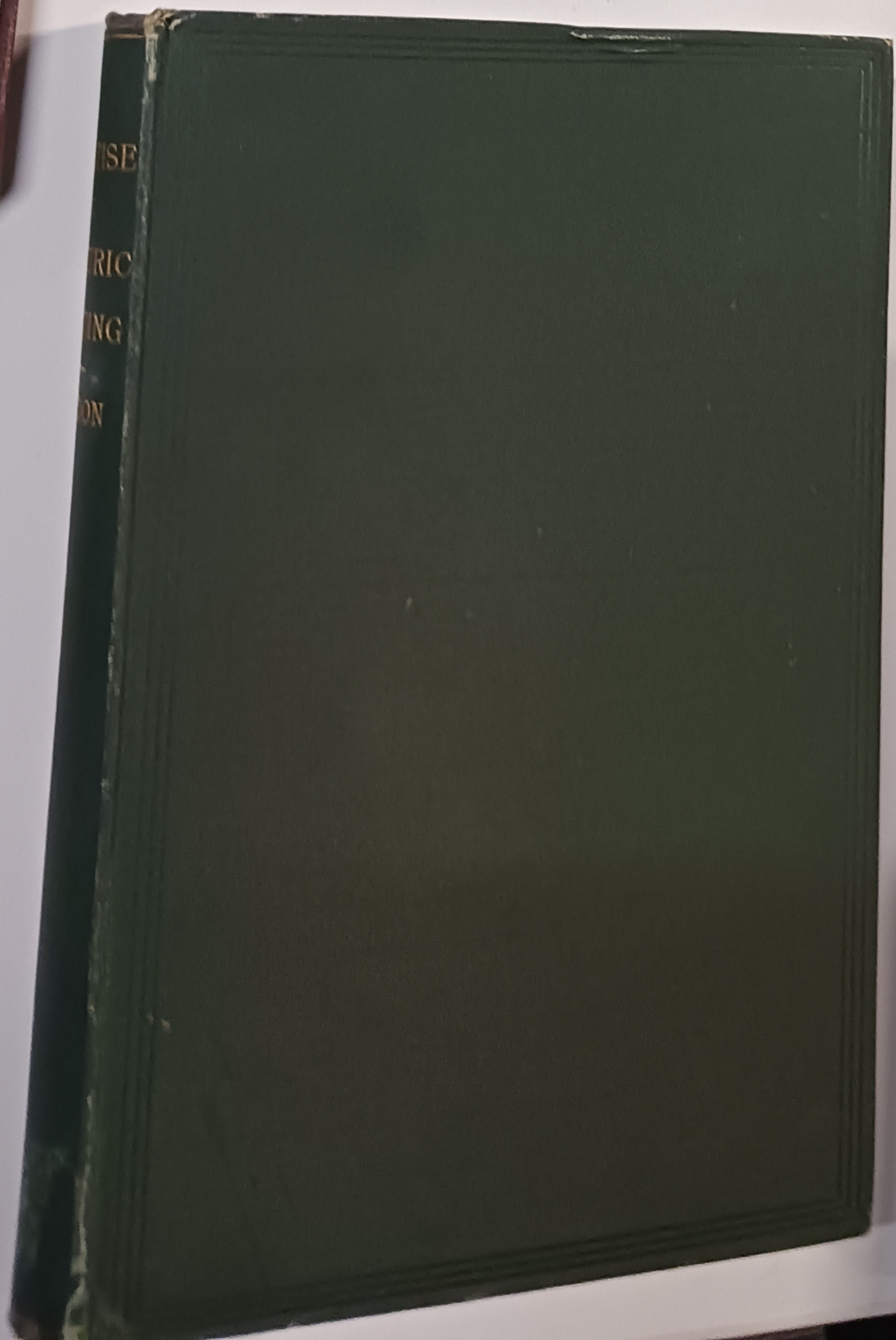
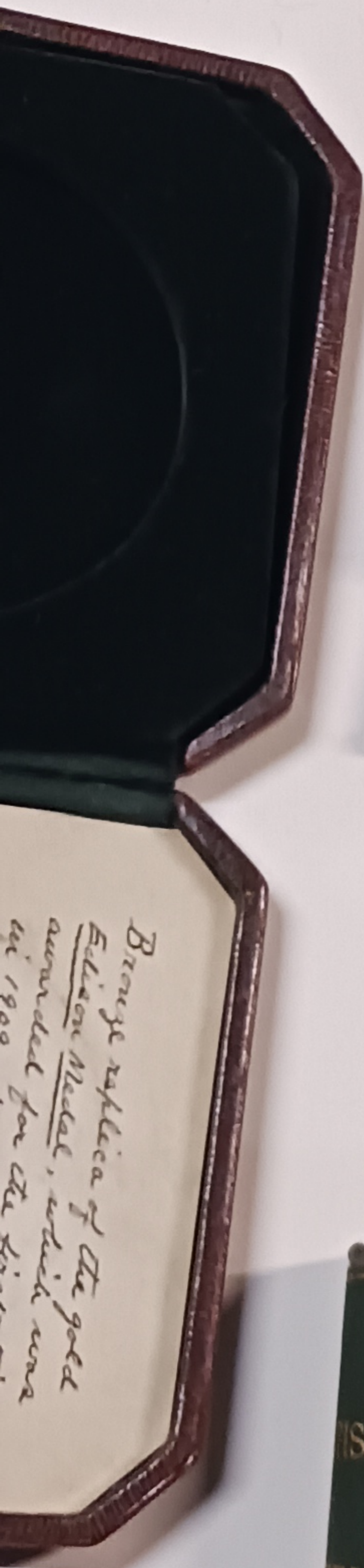
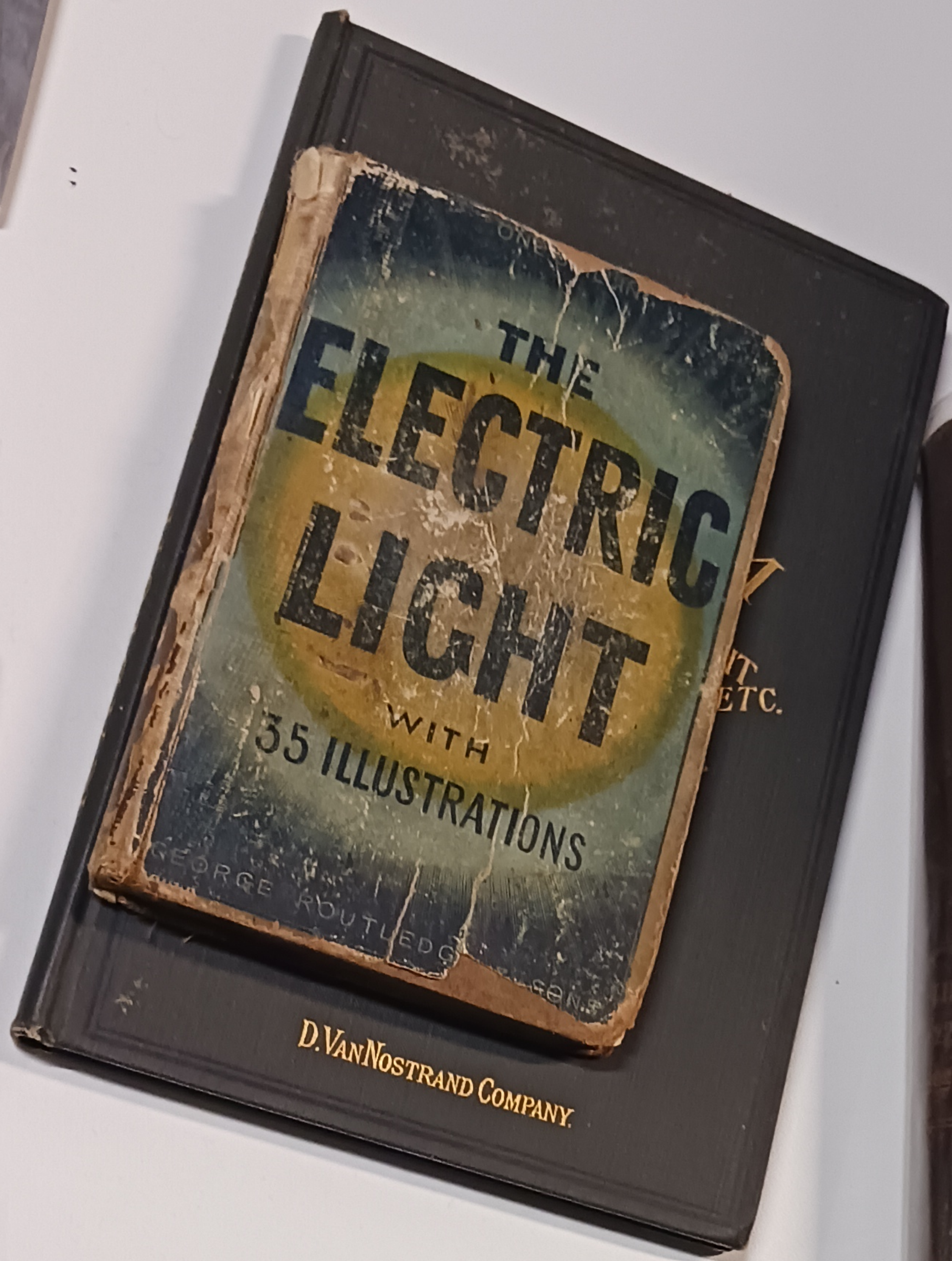


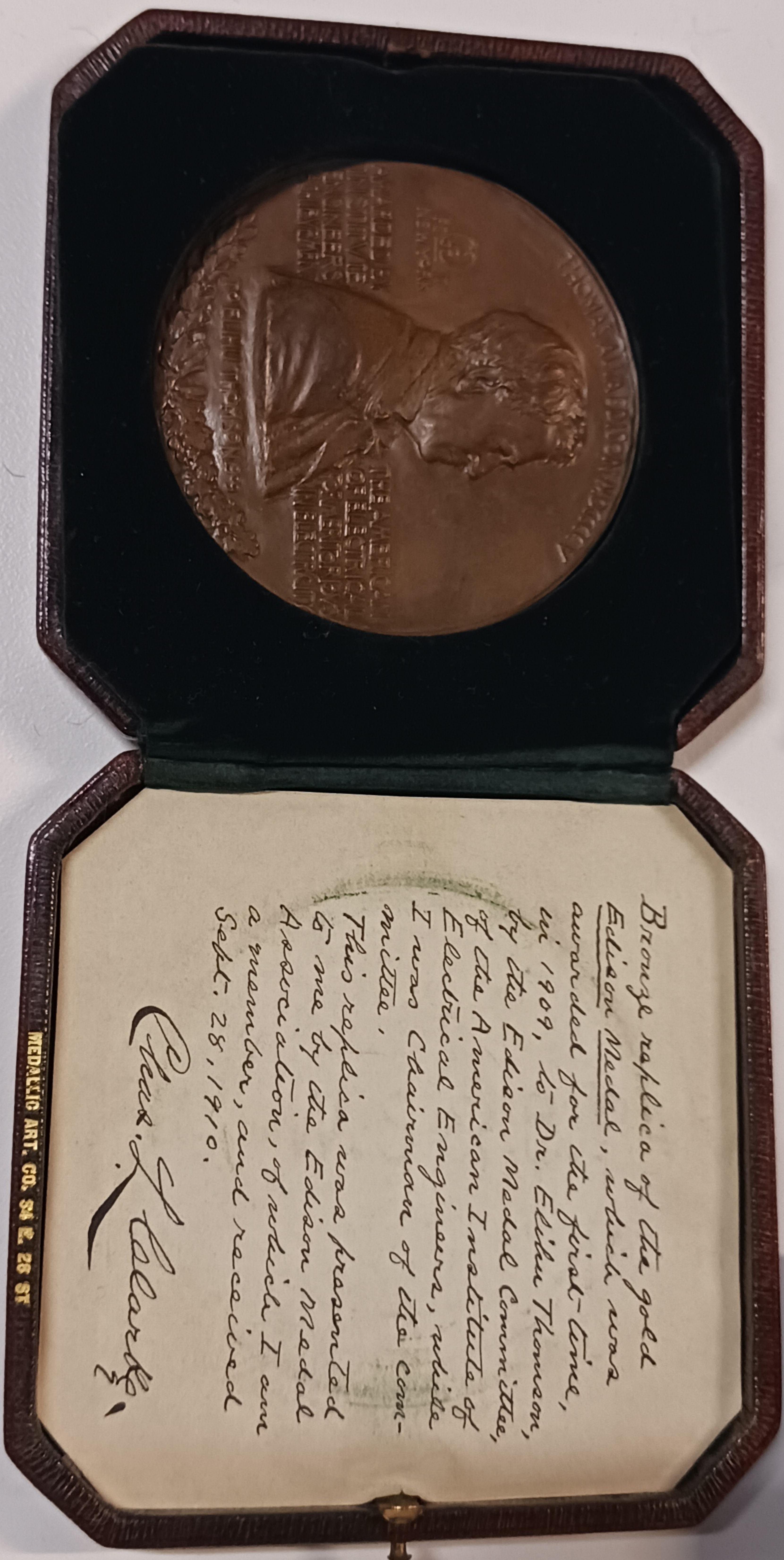








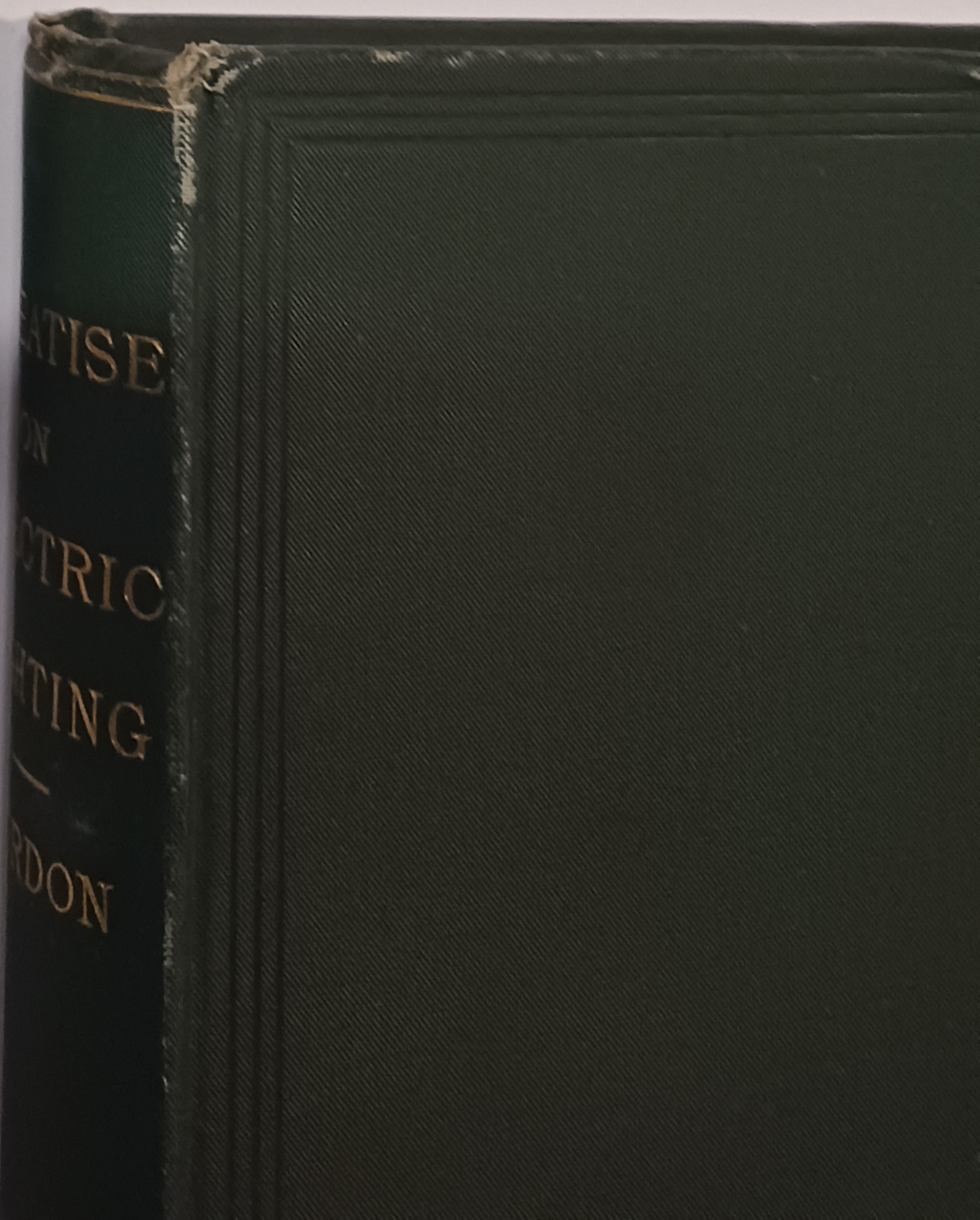




Bronze replica of the gold
Edison Medal, which was
awarded for the first time,
in 1909, to Dr. Elihu Thomson,
by the Edison Medal Committee,
of the American Institute of
Electrical Engineers, while
I was Chairman of the com-
mittee.
This replica was presented
to me by the Edison Medal
Association, of which I am
a member, and received
Sept. 28, 1910.

Chas. F. Calverly

MEDALLO ART. CO. 34 E. 26 ST.



FRANKLIN RESEARCH GLASSWARE CO.

EXPERT REPAIRING

Tubes for Powder and
Acid Lines

Vacuum Gauges

Stop Cocks

MANUFACTURERS OF

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(ration)

rometers

ation Tubes

order from
atch

193

The COLUMBIA
INCANDESCENT
LAMP CO.



MANUFACTURERS
OF

HIGH GRADE INCANDESCENT
LAMPS

FOR ALL SYSTEMS
ST. LOUIS

Ger
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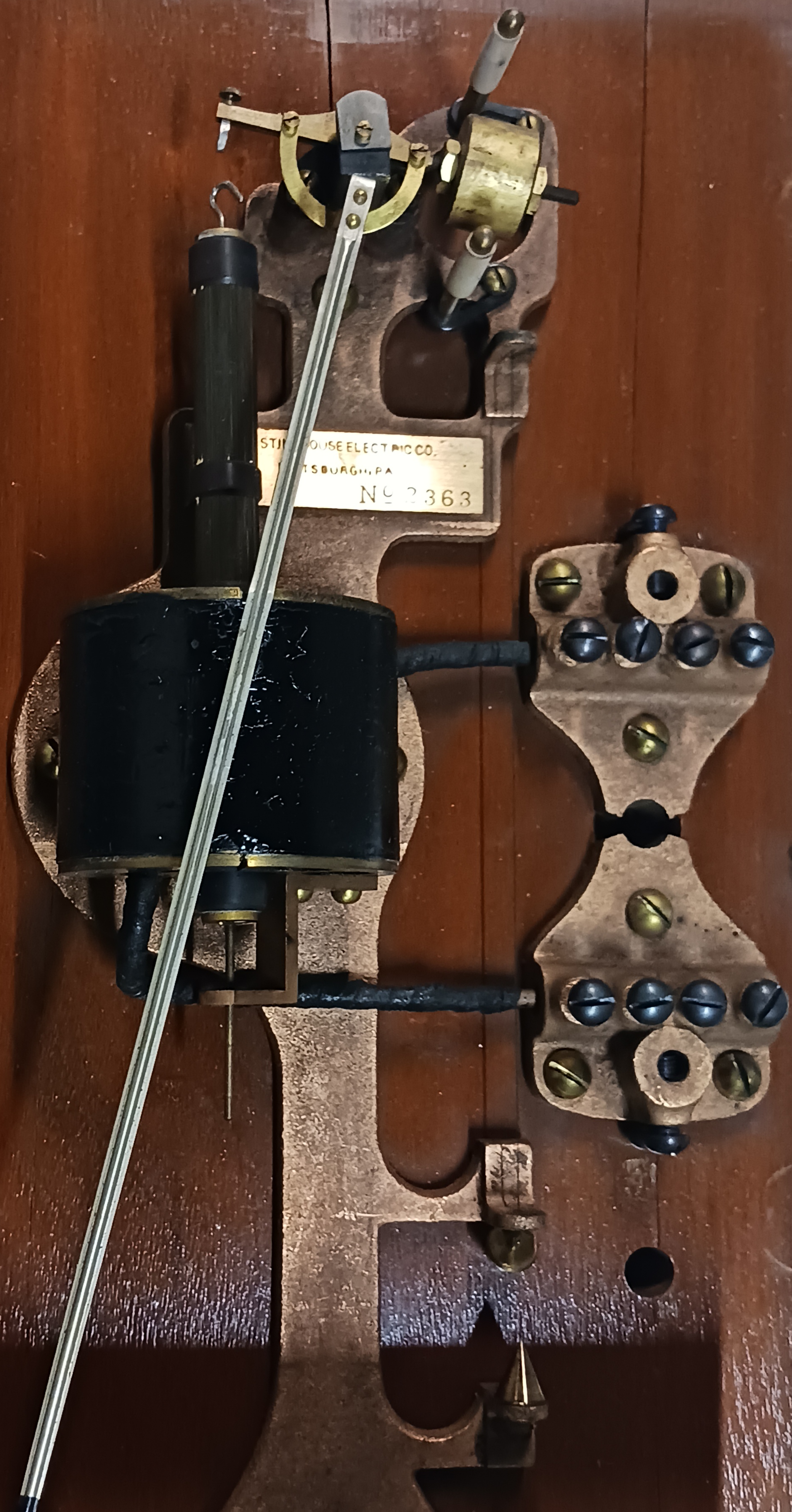
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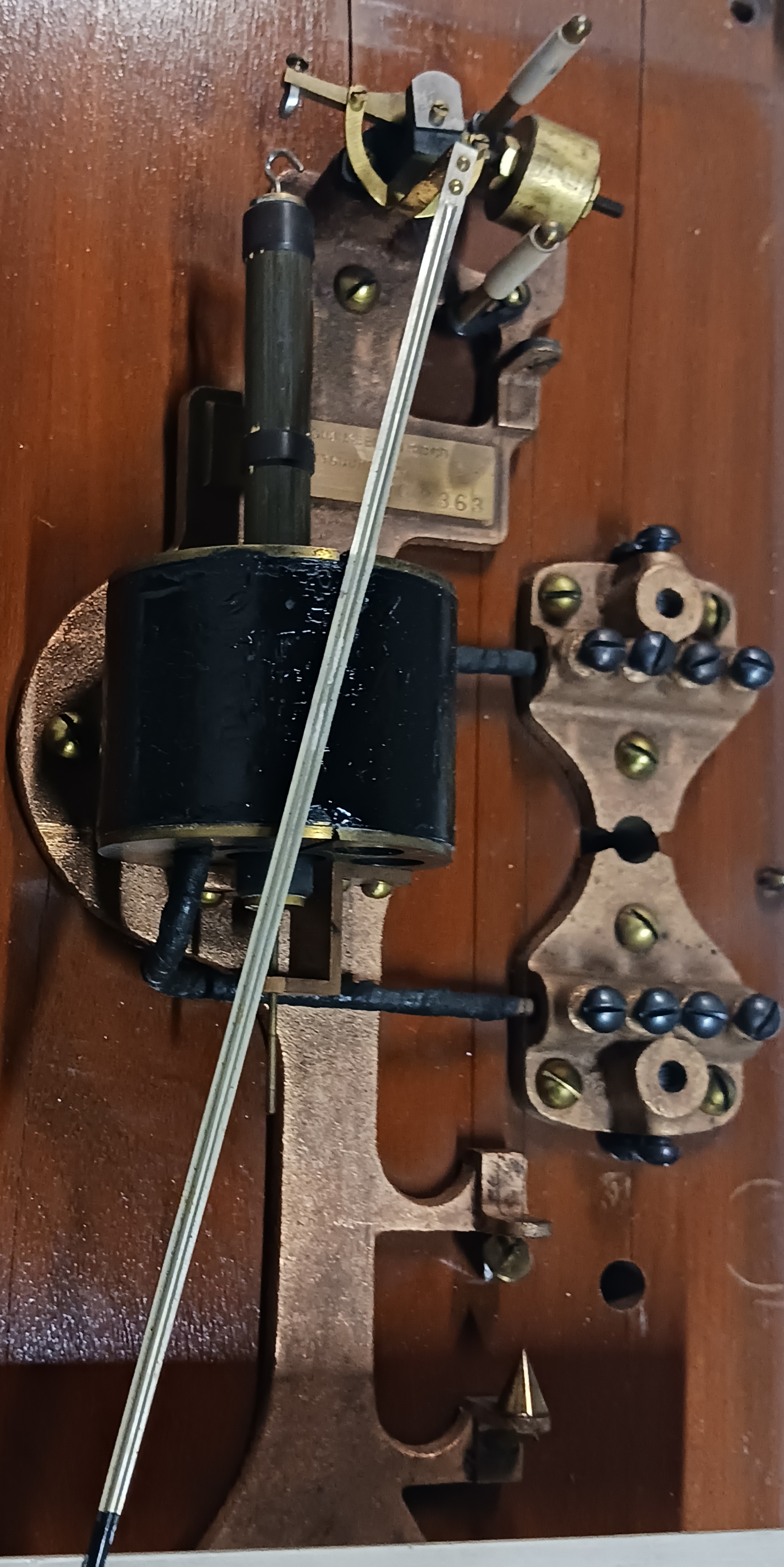
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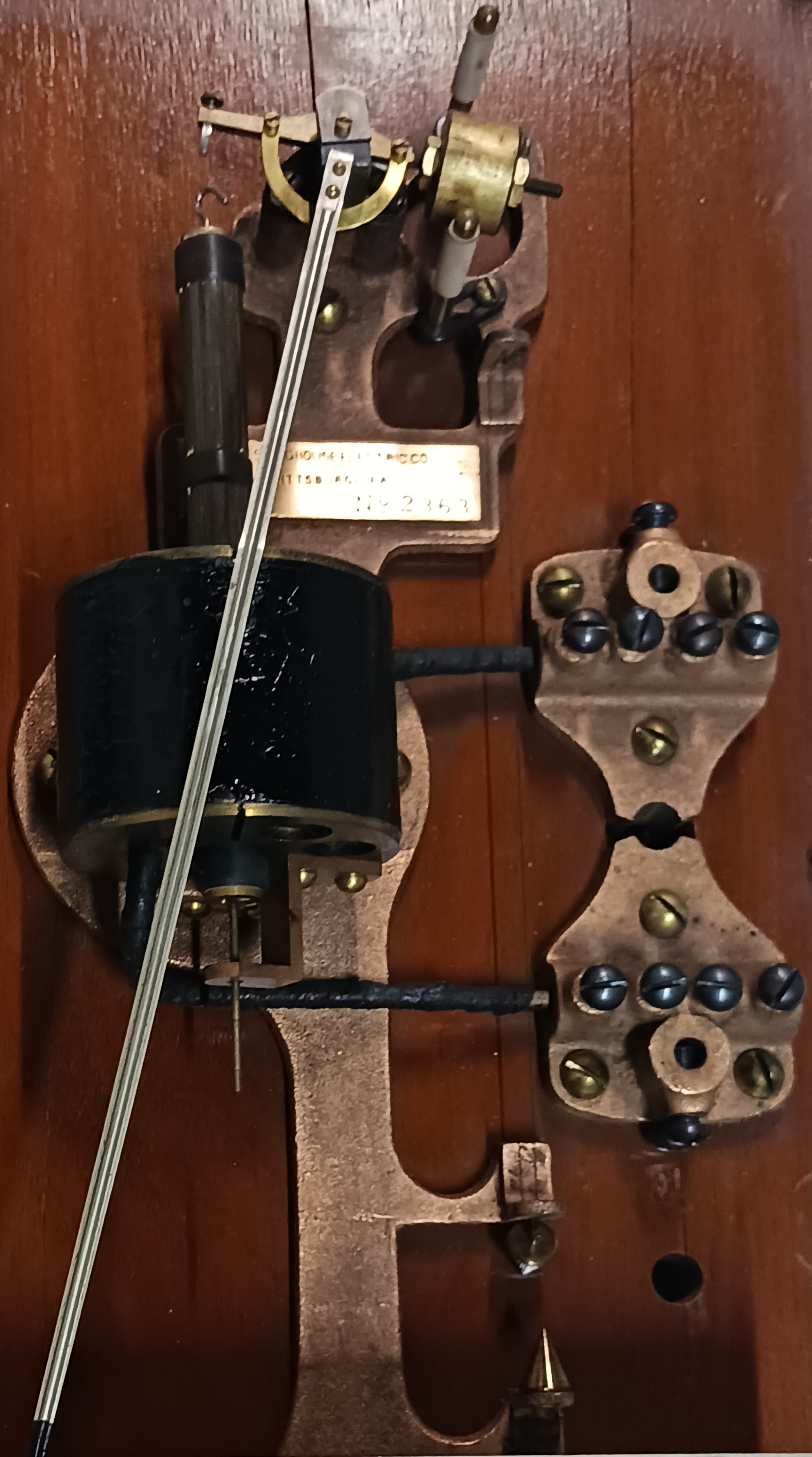
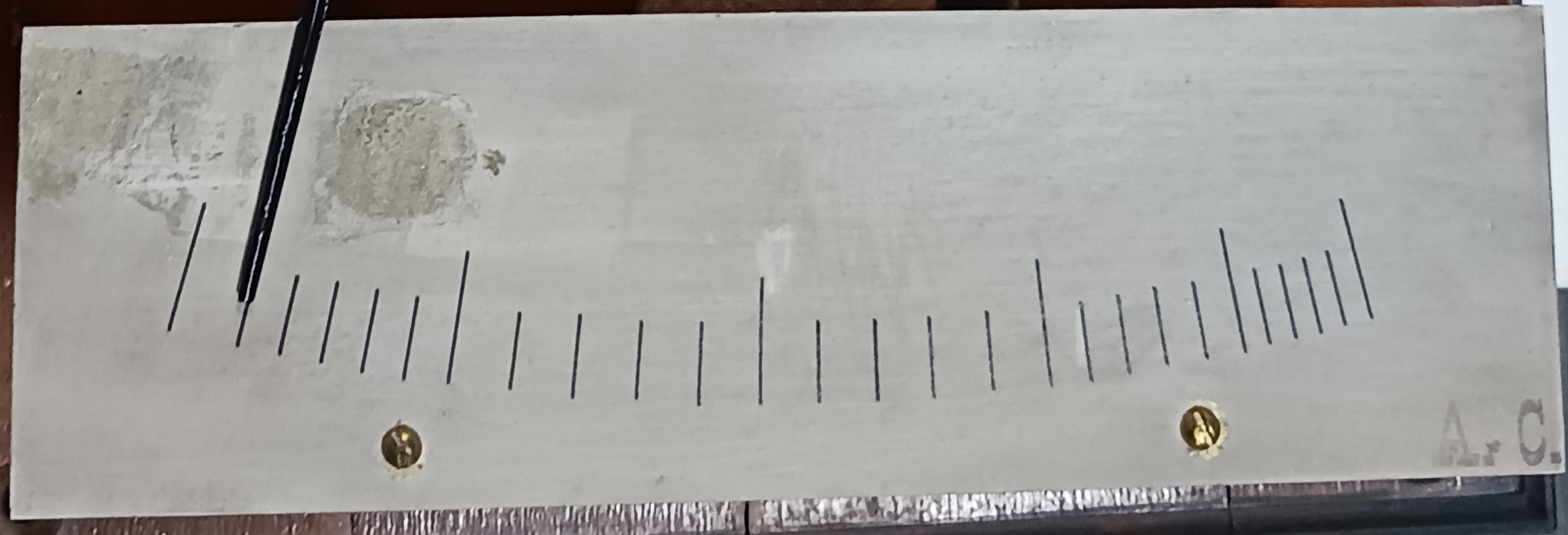


STINGHOUSE ELECTRIC CO.
PITTSBURGH, PA.

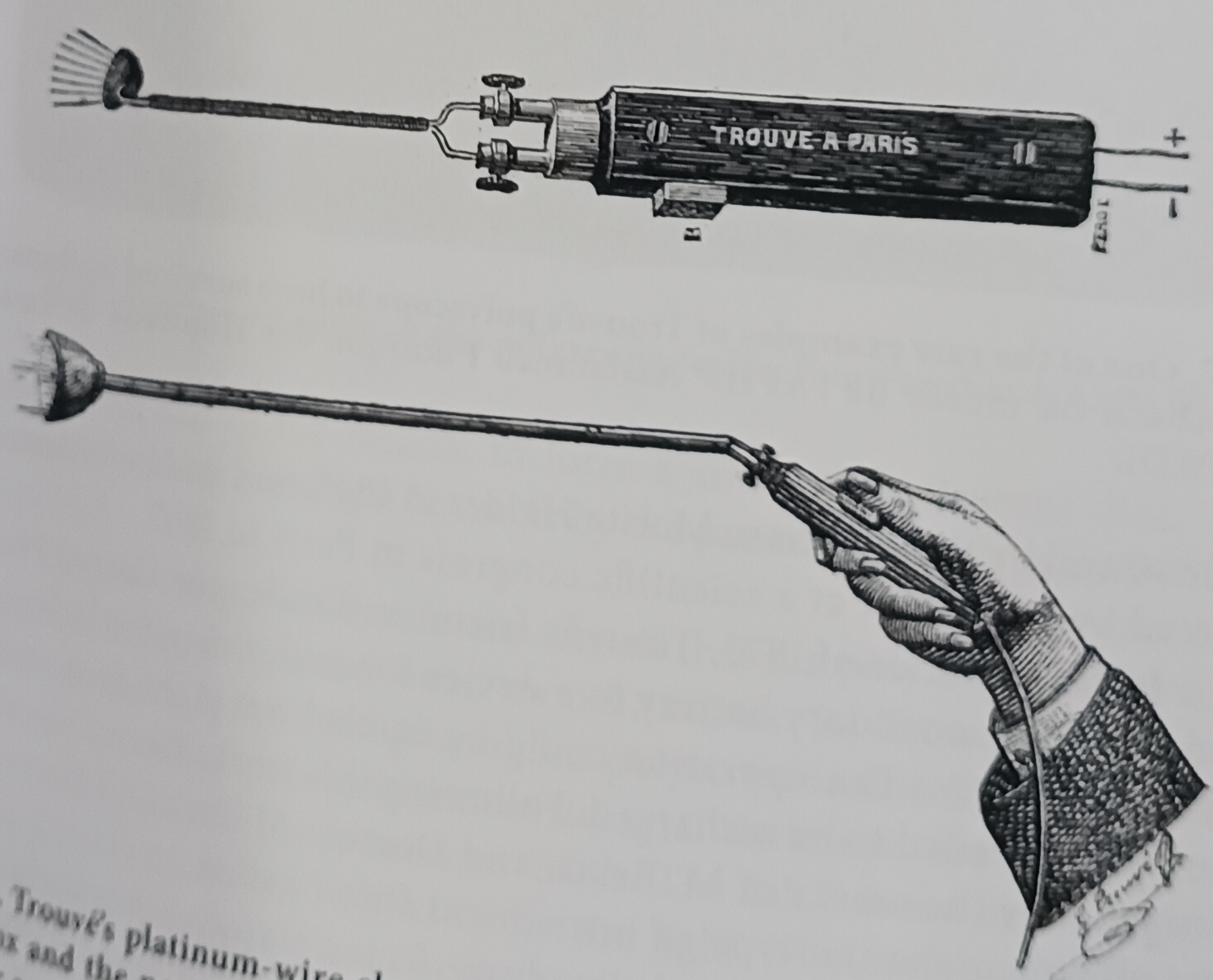
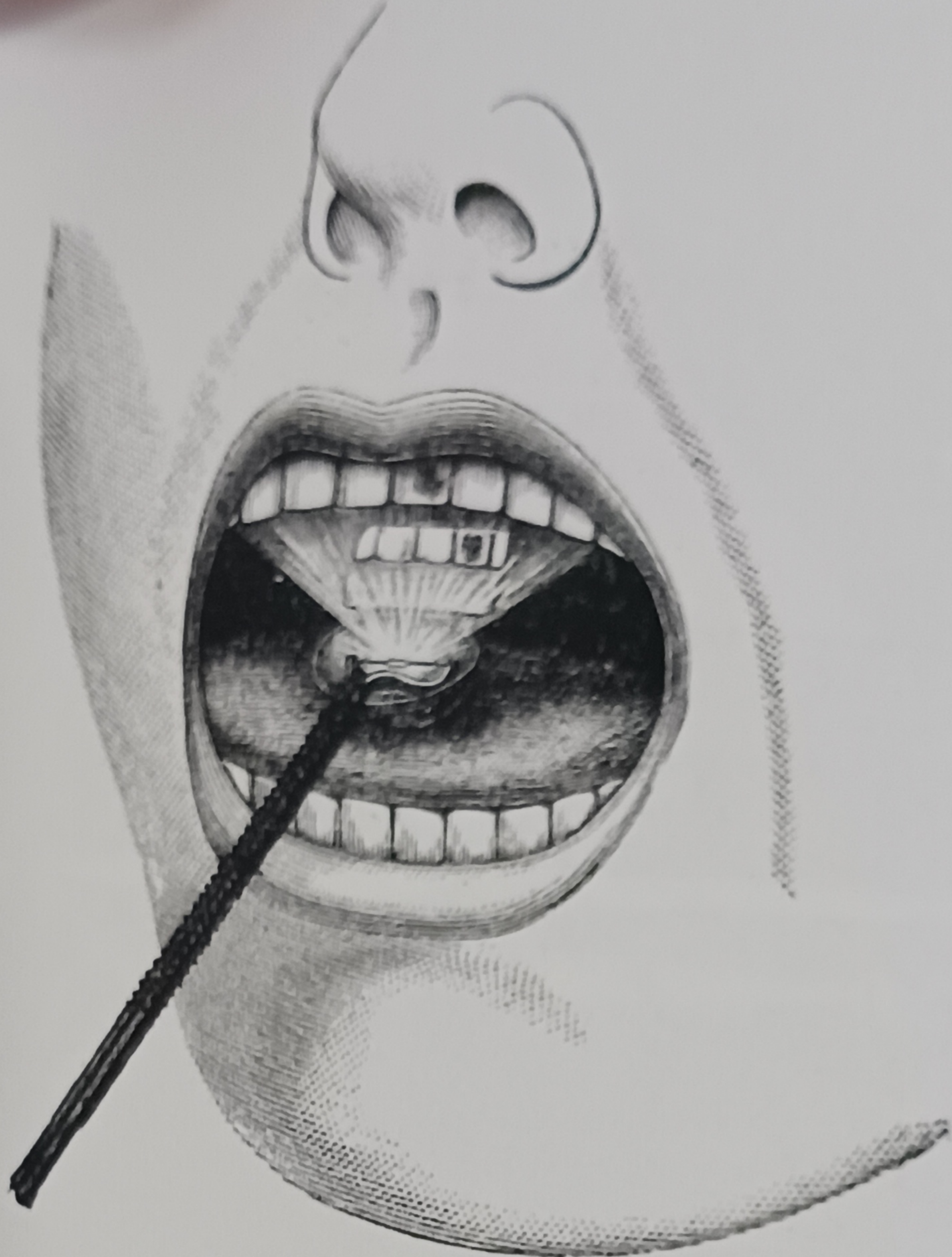
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SHOKEE T. PICO
TTSB. P. C. 1A
1142363



1873. Trouvé's platinum-wire electric polyscope could examine the mouth, the larynx and the nostrils. Versions of it could also examine the speculum, and other easily accessible cavities such as the vagina, etc. Barral, *L'histoire d'un inventeur*, 1873.



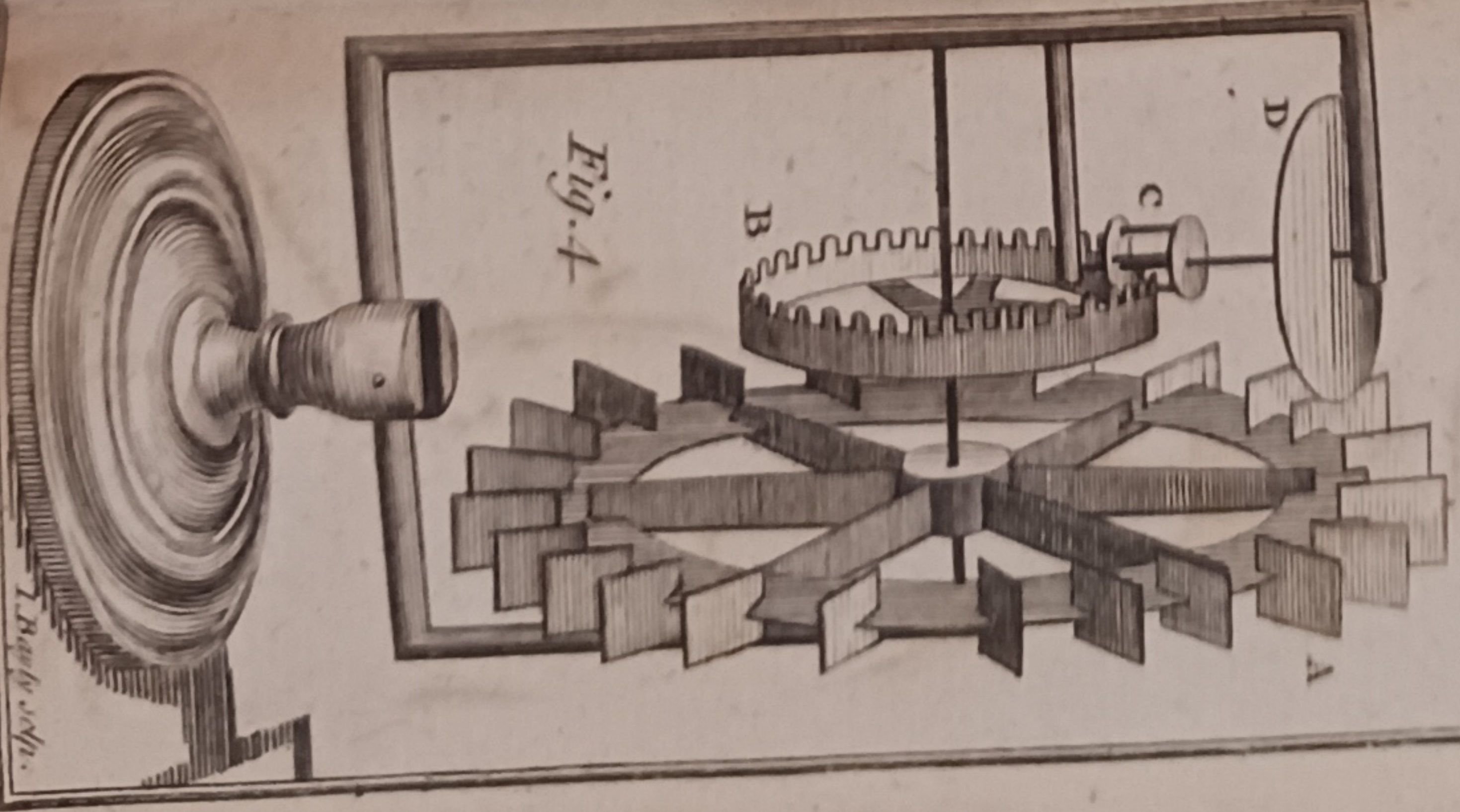
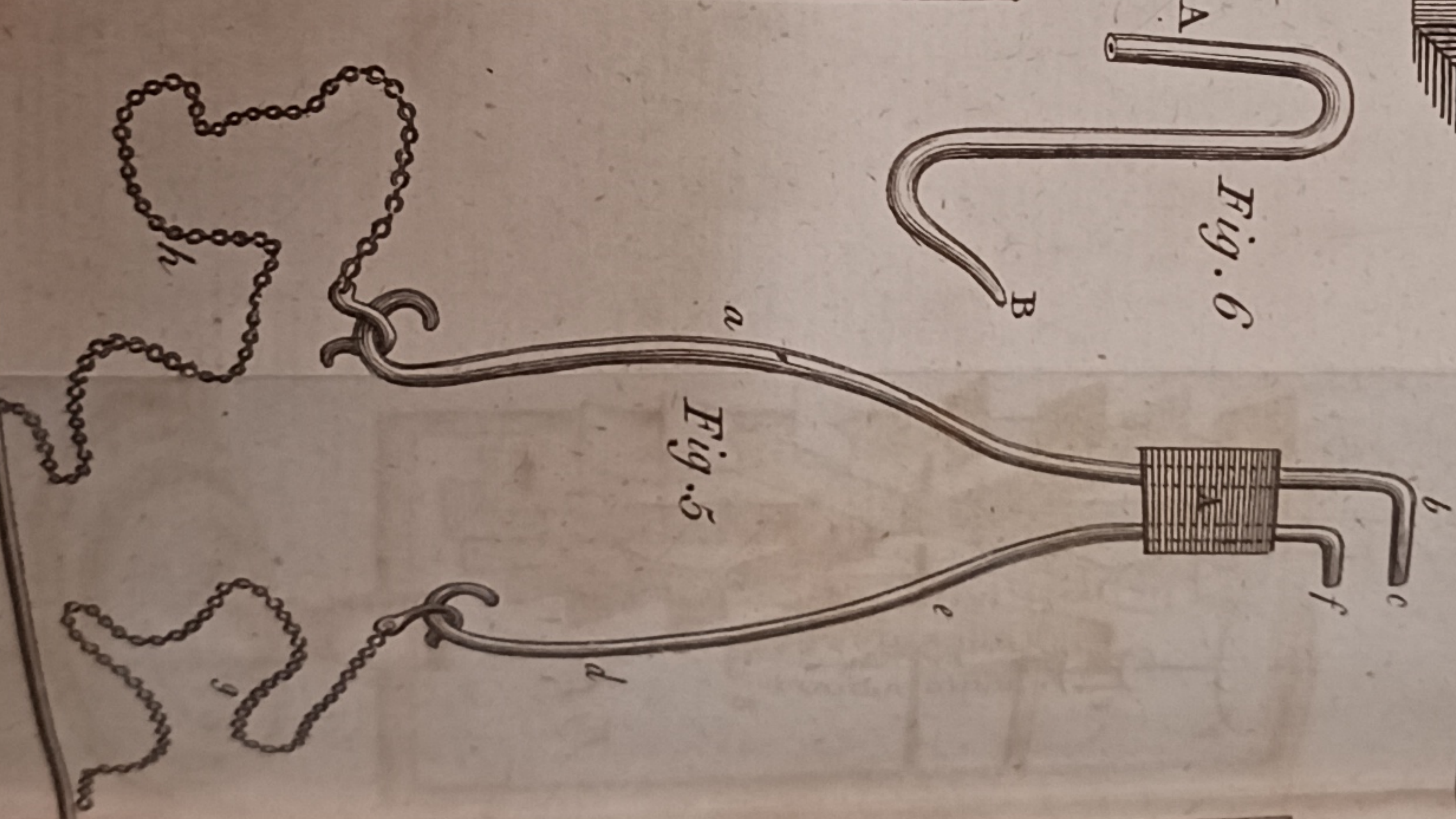
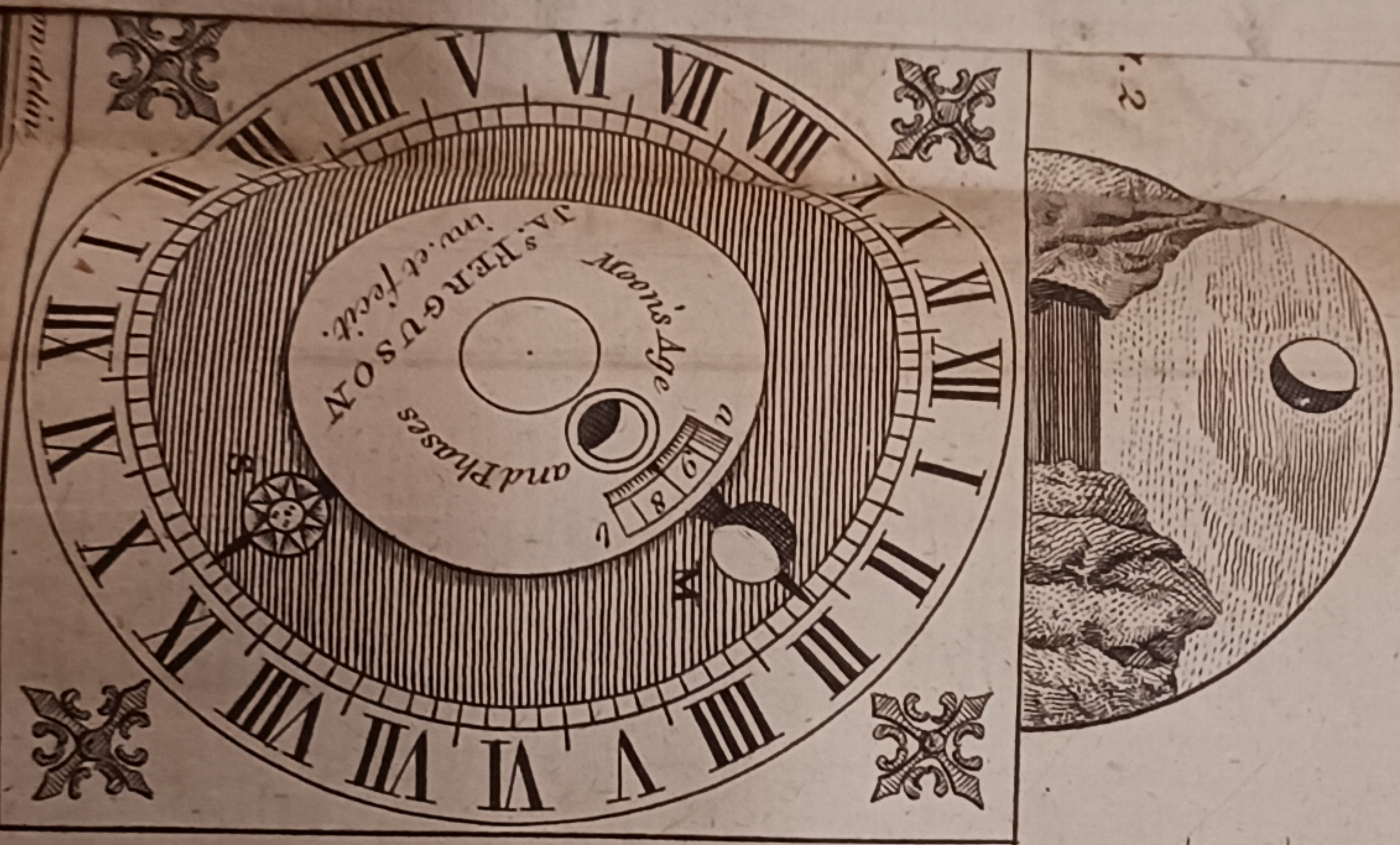
One of the rare examples of Trouvé's polyscope to have survived (collection
 hard du musée de l'APHP Assistance Publique des Hôpitaux de Paris/
 AD).

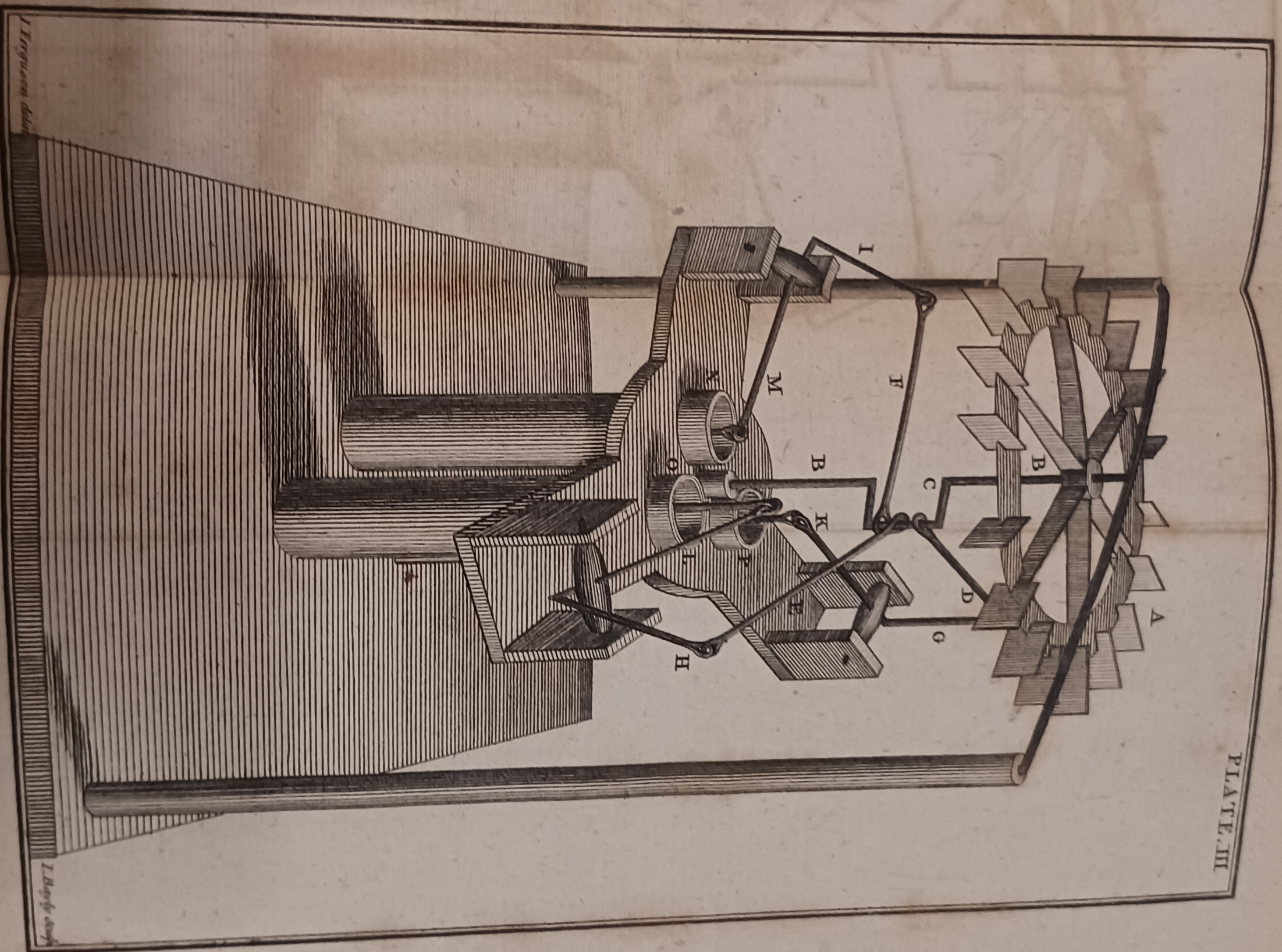
and by the Viennese Moritz Heider in 1845, and had been demon-



1877. Another example of the polyscope (collection Fauchard/AS)
 wires, flattened in the middle to form a small incandescent d
 reduced the heat, making it bearable, and







These are cards taken from Ammington and Series engine
one engine only, but with two engines running.
They drove 1200 light dynamos working on 1000
amps. This was the first successful trial of
running two electrically separate engines with
dynamoes in multiple arc.

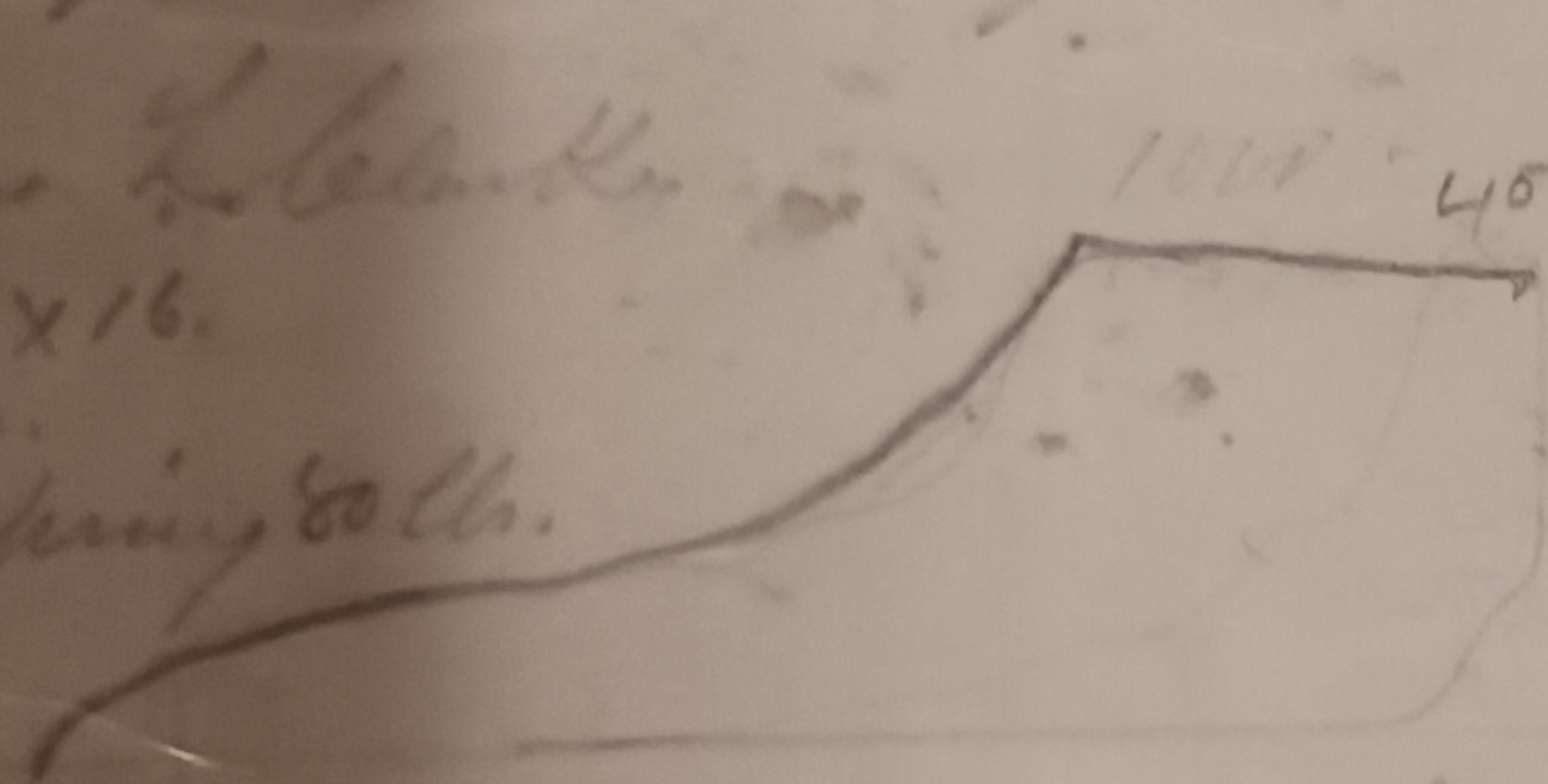
The card shows the varying
load on one engine as the
commutator brushes were
adjusted to make the
other dynamo take
different parts
of the total
load.

Nov. 1882

Taken in test at
Edison Machine
Works - Crocks St.
N.Y.

4 P.M. Monday, Sept. 4, 1882
Porter-Allen first indicator card taken and
Engine immediately after the starting
of the 1st Edison Electric Light-Central
Station (257 Pearl St. New York City) for
permanent operation.

Chas. L. Blodgett
Cyl. 11 1/2 x 16.
Rev. 350.
Scale of spring 20 lbs.



1100 400 lights
The small diagram
faintly traced is the
actual one. The heavy
line was drawn by
Mr. Edison to represent
about the size for 1000 lights.
The figures "1100, 400 lights" are his.

Porter-Allen Engine

500 lights

90 lb. Boiler pressure



At Edison Machine
Works Co.
257 Pearl St.
N.Y.

Ammington and Series Engine.

Edison Machine
Works -
Crocks St.
N.Y.

Nov. 1882

5, Cromwell Houses. S.W.

June 5. 1883-

Dear Mr. William Armstrong

The Carlton Club is
thinking of having the
Electric light, & the
Committee I like to
be put in communication
with Mr. Swan whom
I think you know. I
am not sure of his

Admiral, & I w^d ask
you to do me the favour
of sending him this
note, & requesting him
to write to him.

Henry Fletcher, Secy: Ab.
Cotton Club, & to
suggest some time &
place where he could
meet Mr. Henry, &

has that is proposed.

Pls Dr. let the
to the of Whiting
to me

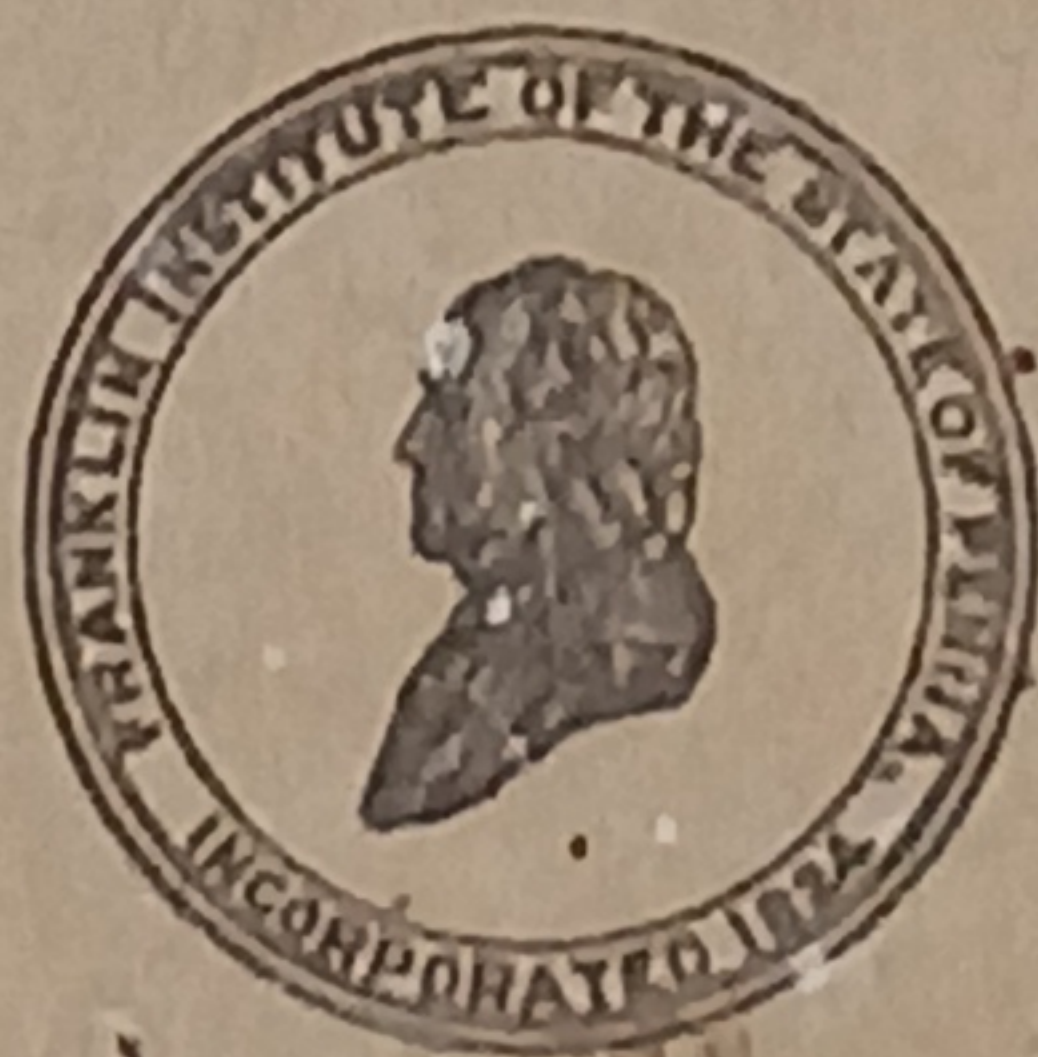
to B. L. L. L.

was in the

Carroll

THE WILLIAM J. HAMMER
Collection of Incandescent Electric
Lamps

Being the Report of the Committee on Science and the
Arts on the Historical Collection of Incandescent
Electric Lamps made and Exhibited at the St.
Louis Exposition of 1904, by Mr. William J.
Hammer.

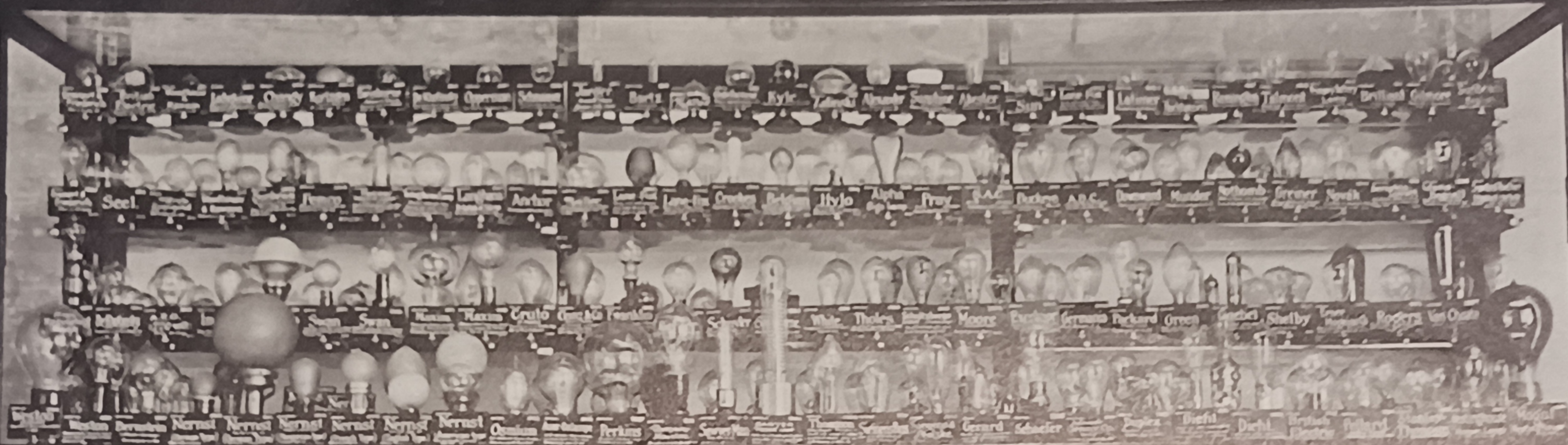


THE FRANKLIN INSTITUTE
PHILADELPHIA
1906

THE HISTORY OF AN ART

Historical Collection of Incandescent Electric Lamps.

Property of William J. Hammer, Consulting Electrical Engineer.
NEW YORK.



THE DEVELOPMENT OF THE INCANDESCENT LAMP UNDER
THE CONTEMPORANEOUS WORKERS IN DIFFERENT PARTS OF THE WORLD.



THE DEVELOPMENT OF THE INCANDESCENT
LAMP UNDER THOMAS ALVA EDISON FROM 1878 TO 1904

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By WILLIAM J. HAMMER.
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"The History of an Art." William J. Hammer's Historical Collection of Incandescent Electric Lamps.

(Reprinted from the *Journal Franklin Institute*, vol. clxii,
November, 1906.)

The William J. Hammer Collection of Incandescent Electric Lamps.

[Being the Report of the Committee on Science and the Arts on the Historical Col-
lection of Incandescent Electric Lamps made and Exhibited at the St. Louis
Exposition of 1904, by Mr. William J. Hammer. Sub-Committee: C. J. Reed,
Chairman; Carl Hering, Thomas Spencer.]

[No. 2385.]

The Franklin Institute, acting through its Committee on Science and the Arts, investigating the merits of the collection of more than 1000 incandescent electric lamps, made by Mr. William J. Hammer, of New York, reports as follows:—

This collection of lamps, made during a period covering more than a quarter of a century, may truly be said to represent the "History of the Art." This history embodied in this collection is not a history that could have been recorded in words, that could be duplicated by any process or reproduced if destroyed.

It is the result of the most vigilant and systematic efforts on the part of the collector during the past twenty-five years and over, not only in the United States, but in many countries of Europe during his various sojourns abroad, which covered altogether about six years. This collection was started in 1879, when, at the beginning of Mr. Edison's work, Mr. Hammer had charge, in Mr. Edison's laboratory at Menlo Park, N. J., of certain tests and records relative to the life, efficiency and general characteristics of the Edison lamps. Mr. Hammer was afterwards appointed electrician of the first Edison lamp factory at Menlo Park and here he obtained much of the material forming the earlier part of the collection.

At a great personal outlay of time, labor, thought, and money, he has secured material showing practically every step in its development, from Edison's early platinum thermostatic-regulator lamp, platinum-iridium spiral lamps, multiple foil platinum lamps, oxide-of-zirconium lamps of 1878, up to the most modern type of lamps. The collection embraces, not

only the entire art under Edison, dating from his first commercial lamp, the famous "paper horse-shoe" lamp of 1879, his plumbago, graphite, bamboo, and other vegetable filament lamps, but also the work of Edison's contemporaries here and abroad from this early period down to the present time, including the following:—

Swan, also Edison-Swan, Ediswan, Swan United, and Brush-Swan types, Lanz-Fox, Maxim, Weston, deChangy, Sawyer, deLodryguine molybdenum, Cuto, Gatchouse, Kurizgen, Swinburne, Crookes, Bernstein, Müller, Boehm, Gerard, Latimer, Rogers, Opperman, Diehl, Thompson, Stanley-Thompson, Thomson-Houston, Remington, British Electric, Akester, Alexander, Richter, Schuyler, Duplex Co., Siemens & Halske, Siemens Bros., Greiner & Friederich, Virrite-Luminoid, Sawyer, Sawyer-Man, Nothomb, Hochhausen, Hammer, Sun, Franklin, Schmauser, Greiner, Schaefer, Jenny, White, Excelsior, Belgian, and includes also the more modern development under Ganz & Co., United Electric, Van Choate, Guest, Phoenix, Gilmore, Sun-Star, Solar, Monarch, Colonial, Economy, Brilliant, Tipless, Sterling, Comet, Capital, Gachel, Von Kameron, Dublino, Elblight, Zenith, American, A. E. G., New Universal, "Watt," Hardy, Trilight, Fostoria, Malden, Esco, Meriden, T. A. Edison, Jr., Tipless, "Guage," Premier, Miller, Buckeye, Femeo, S. A. C., Sunbeam, Packard, Perkins, Boston, Westinghouse, Novak, Columbia, Seel, Pray, A. B. C., DeKhotinsky, Zugh, Peerless, Orient, Banner, Downward, Hylo, Economical, Anchor, Muuder, Brian-Marsh, Empire, Fabius-Henrion, Compagnie Centrale d'Electricite, Compagnie General des Lampes, Larnaud, Zurcher, Gelnhausen, Pintsch, Bayeische, Goosens-Pope, Phillips, Kremenetzsky, Schonlah & Scharis, Clerici, Vereingte E. A. G., Sturm, Heany tungsten, Talmont, Adams-Bagnal-Hammer "Radium", Pollard, Imperial, Thowless, Shelby, Kyle, Zalinisky, Kentucky, Star, O'Brien, Sunshine, Germania, Elbe, Novelty, Nernst, Robertson, Moore, Osmium, Aueros, Osmi, Osram, Osmin, Langhans, Crawford-Voelker, Tantalum, New Edison Graphitic Lamp, Kuzel, Just & Haneman, Hollefreund, "Z", Zirconium, Canello, etc.

In nearly all cases the lamps constituting this collection are the very first ones or among the first made by the respective inventors. Some are the only lamps of their type which have been made and they are all samples constructed early in the development of the period to which they belong. The collection comprises over 1000 lamps, each marking an important step, experimental or otherwise, in the development of the art. Mr. Hammer received the "Grand Prize" for his collection at the St. Louis Exposition of 1904.

The Committee feels that it can express its opinion as to the great historical value of this monumental collection in no better way than to quote from the letters and statements of a few of the ablest men of the scientific, engineering and commercial world, of whom over 200 have expressed themselves on the subject:

Prof. Elihu Thomson says of the collection: "It is perfectly unique, covers the whole period of development of the lamp, and it must be admitted by any one at all familiar with the circumstances that no similar collection could ever again be gotten together; in other words, your collection is impossible of duplication, or even approximate duplication. This statement cannot be made too strong."

Lieut. W. V. N. Fowelson, Chairman of the Departmental Jury having supervision over the work of all the Electrical Group Juries, after the various members of the Jury had spoken in high appreciation of the collection, said: "In my opinion if the St. Louis Exposition were to give but a single Grand Prize, it should be awarded to William J. Hammer."

The following are extracts from some of the 200 letters which Mr. Hammer received, many of which are from leading authorities here and abroad. The originals were submitted to the Committee for examination. They are given here in the order in which they happen to be and not necessarily in the order of their importance:

"I esteem it as a complete and unique showing of the progress of the Art from its first beginning to the present time and very valuable in that it cannot be duplicated. As such it would please me greatly if it could be secured by some institution where it would be safe from destruction and where it could be studied by every one so desiring."

CHARLES BATCHELOR.

"I would like to see your collection remain in America as a priceless history of an art . . . You have the only collection of the kind in the world, as you have followed up your early collecting not only in this country, but in Europe."

F. R. URTON.

"This collection is worthy of being permanently preserved in a most careful and safe manner so that it may be accessible to electrical specialists and to the public generally."

PROF. FRANCIS B. CROCKER,
Columbia University.

"I regard your collection of historical incandescent lamps as

"The collection of incandescent lamps which you have made illustrating the historical development of the incandescent lamp is a very valuable one and ought to be preserved in some public institution."

E. B. ROSS,
Bureau of Standards, Washington, D. C.

"I regard your collection of incandescent lamps as extremely interesting, and wish that they might find a permanent abode where they would be open to inspection by future generations."

F. P. FISH,
President Am. Telegraph and Telephone Co.

"Such a collection I should regard as being of considerable interest and much practical educational value. I trust that you will succeed in placing it where it will become a permanent exhibit."

GEORGE WESTINGHOUSE.

"In my judgment this collection of incandescent electric lamps ranks foremost among America's scientific historical collections, and as time goes on interest therein will increase and its importance to the engineering world and especially to electrical engineers of the future will be infinitely greater and in fact invaluable. I most earnestly recommend that if possible this collection be permanently placed on exhibition where it will be safely conserved in one of our leading public institutions."

W. H. WHITESIDE,
President Allis-Chalmers Co.

"Permit me to say that your far-seeing intelligence in securing this collection, beginning at an early period that you did, merits the commendation of all interested in electrical science and electrical industry, and in this commendation I most heartily join."

CHARLES W. PRICE,
Editor Electrical Review.

"I shall rejoice to see you receive a fitting reward of your patience and industry in making this collection and in holding it together through so many years."

T. C. MARTIN,
Editor Elec. World and Engineer.

"Nothing even approaching it in uniqueness and completeness is in existence in any of the allied branches of applied science. With no missing links in your collection you have made available for the engineering world a record of Electric Lamp development of which the value is inestimable."

ALBERT SPIES,
Editor of Cassier's Magazine and Elec. Age.

"I well remember seeing these lamps at the St. Louis Expositi-

tion, and in common with all who saw it, was very greatly impressed with the perfection and completeness of the collection, which I am sure cannot be equalled by any similar one relating to a special industry in the world. I only wish that we in England could have an opportunity of access to such a valuable exhibit. As a member of the Electrical Jury at the St. Louis Exposition, I cannot do better than echo the opinion of the chairman of that jury as to the value of the collection."

DR. CHAS. V. DRYSDALE,
Northampton Institute, London, Eng.

"It goes without saying that this collection, which evidently represents the careful work of years, stands alone in technical history. To me the completeness and adequateness of the collection proves amply that it was with you entirely a labor of love. Such work is altogether too seldom seen in these days of fierce commercial competition. As such inventions may be considered among the greatest achievements of the race, it is vitally important that the historical documents illustrating the struggles and triumphs of our pioneers shall not be altogether lost."

LEE DEFOREST,
Vice-President DeForest Wireless Tel. Co.

"The collection not only signifies painstaking care and patience and labor, but an unselfish devotion to electrical science, which has prevented the ruthless destruction of these lighting landmarks which represent so much life blood and brain, and which if destroyed would in future time cause the greatest regret. While not in that section of the Electrical Jury at the St. Louis Purchase Exposition, I certainly would have voted your collection the highest prize had it been in my power."

PROF. J. C. KELSEY.

"I am certainly glad of this opportunity of once again confessing, as I have already confessed as a member of the Jury of the St. Louis Exposition, my great admiration of your historical collection, the perfection and importance of which cannot be overlooked by any student of technical history who is interested in the history and progress of the science and for this reason it is very desirable that the aforesaid collection should be placed in a position which shall easily be accessible to students."

PROF. GUIDO GRASSI,
R. Museo Industriale Italiano, Turin, Italy.

"I consider that the person who has devoted himself to so laborious a task as was involved in creating this unique collection should be adequately recompensed by granting him the 'Grand Prize,' and for this reason I suggested in the course of our dis-

cussion on the subject of awards in the International Jury, the idea of granting to Mr. Hammer the 'Grand Prize' for his unique collection of incandescent lamps."

GASTON ROUX,
Con. Eng. and Director of Bureau of Control
of Elec. Installations, Paris, France.

In consideration of the great historical and educational value of this collection; of the years of unselfish labor and energy devoted to it; of its unreplaceable and monumental character, the Committee recommend the award of the Elliott Cresson Medal to Mr. William J. Hammer, of New York, for his "HISTORIC COLLECTION OF INCANDESCENT ELECTRIC LAMPS."

Adopted at the meeting of the Committee on Science and the Arts, held Wednesday, April 11th, 1906.

ATTEST: WM. H. WAHL, *Secretary*.

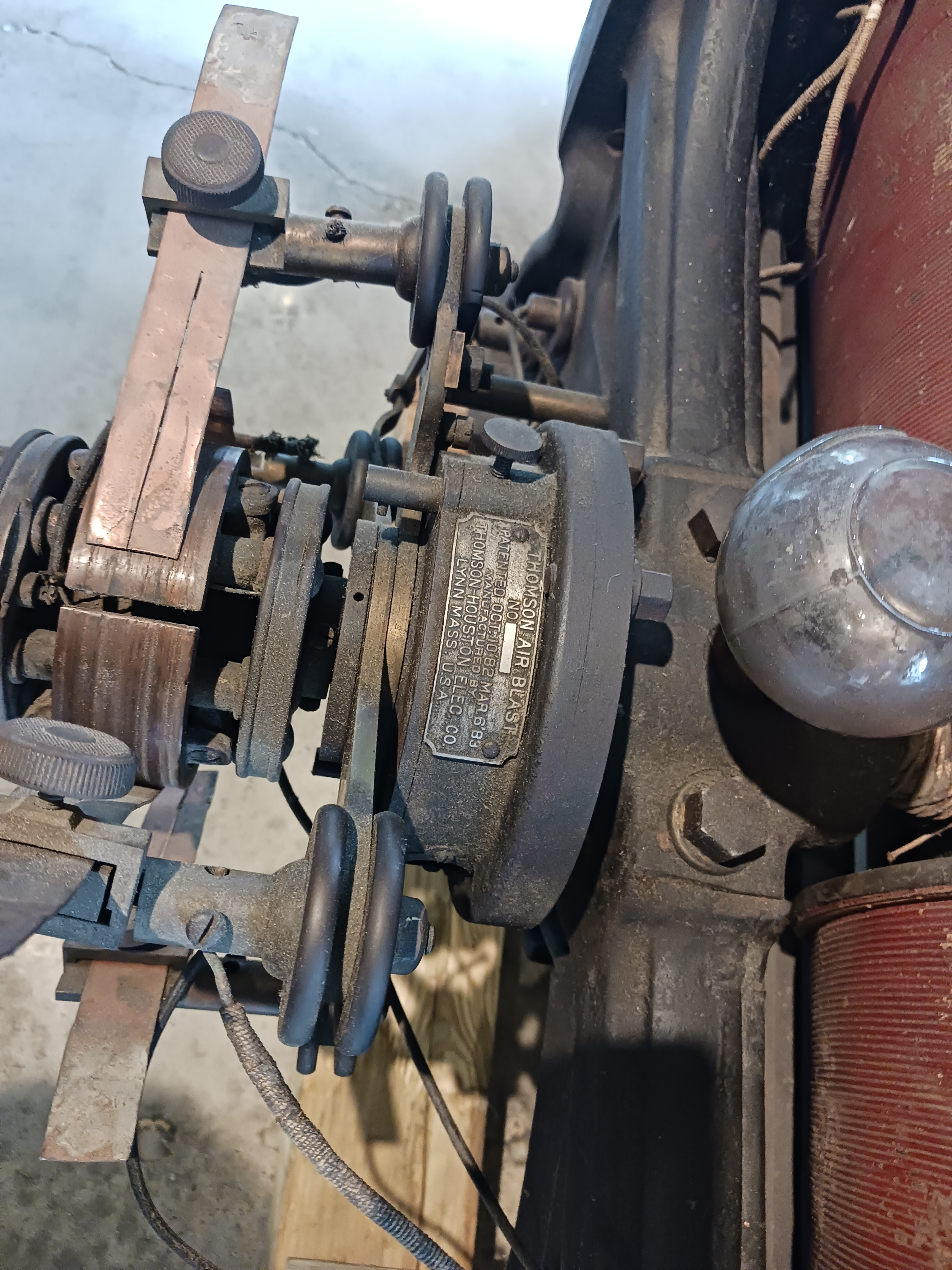
SUPPLEMENTARY NOTE BY THE EDITOR.

In connection with this report there is published a plate (*See frontispiece*), showing the appearance of this remarkable exhibit of lamps made by Mr. Hammer at the St. Louis Exposition.

Since the collection was exhibited at St. Louis, in 1904, he has supplemented it by samples of various lamps which have appeared since, particularly the Tantalum and Tungsten lamps.

It is Mr. Hammer's earnest wish that this collection shall be kept absolutely up-to-date as time passes, that it may always represent a complete "History of An Art," and to this desirable end he will always lend his enthusiastic co-operation. This has always been his wish and intention and in the years past he has been buoyed up in his laborious task by the hope that his work, if successfully carried out, would stimulate others to make similar collections forming priceless records of the inception, development and perfection of other arts, and perhaps ultimately result in an engineering museum in which engineers could deposit their models and inventions, where they would be properly safeguarded, where they would be of infinite interest to the world at large, where they would be of great service to the historian, where they would be a constant stimulation to the young engineer and to the inventor, and where they would be of enormous educational value to all engineers.

THOMSON AIR BLAST
NO. []
PATENTED OCT. 10 '82 MAR. 6 '83
MANUFACTURED BY
THOMSON-HOUSTON ELEC. CO.
LYNN MASS. U.S.A.

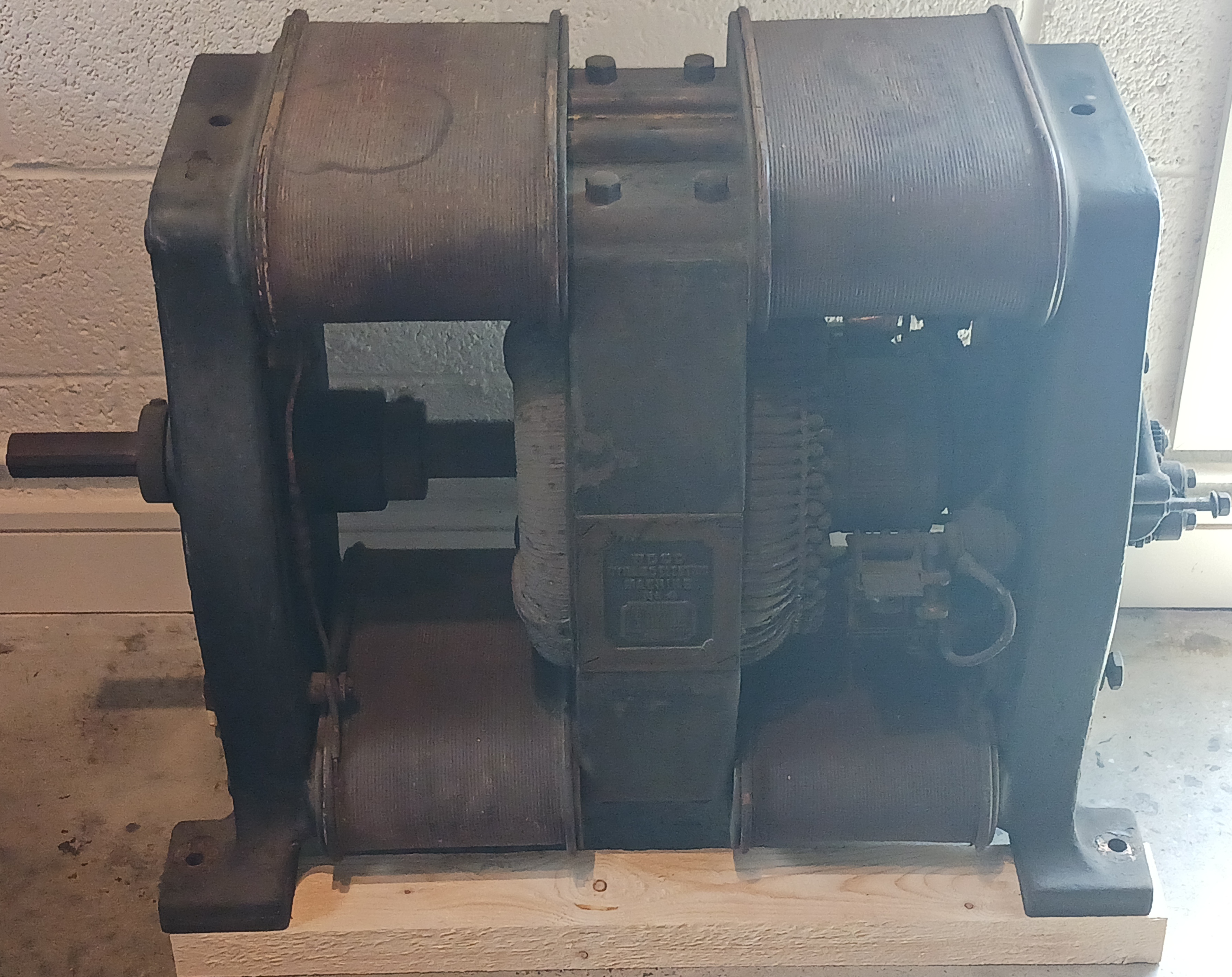










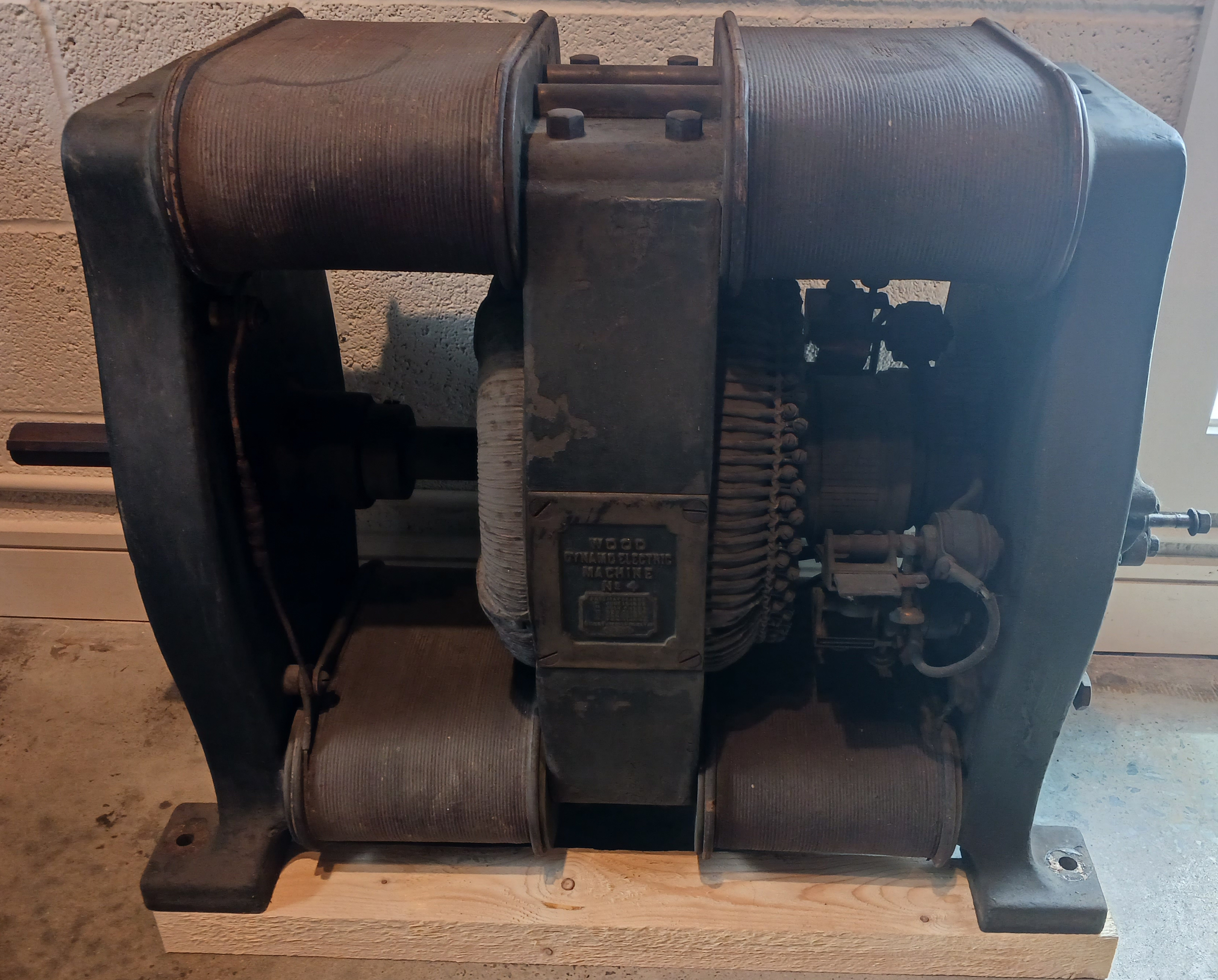


WOOD
DYNAMO ELECTRIC
MACHINE
No 4

PAT. MAY 26/88.
JUN 19/88.
JULY 6/89.
DEC 31/89.
JAN 26/90.
FEB 11/90.

OTHER PATENTS APPLIED FOR

110







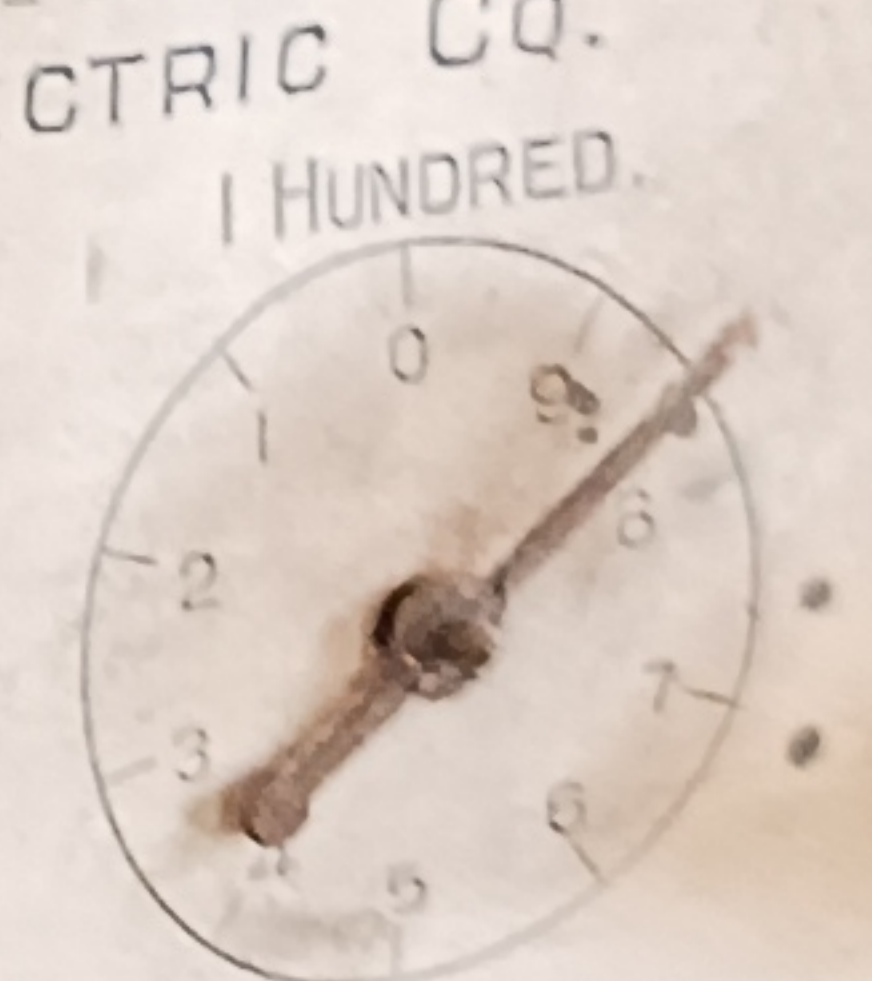
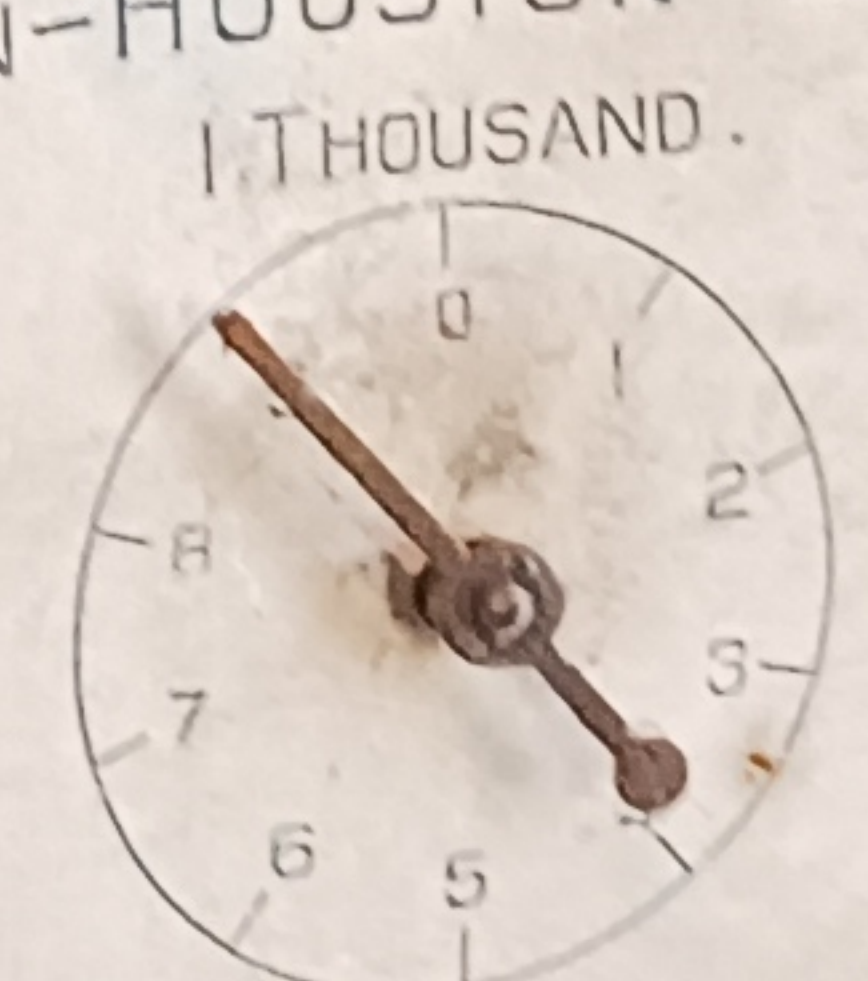
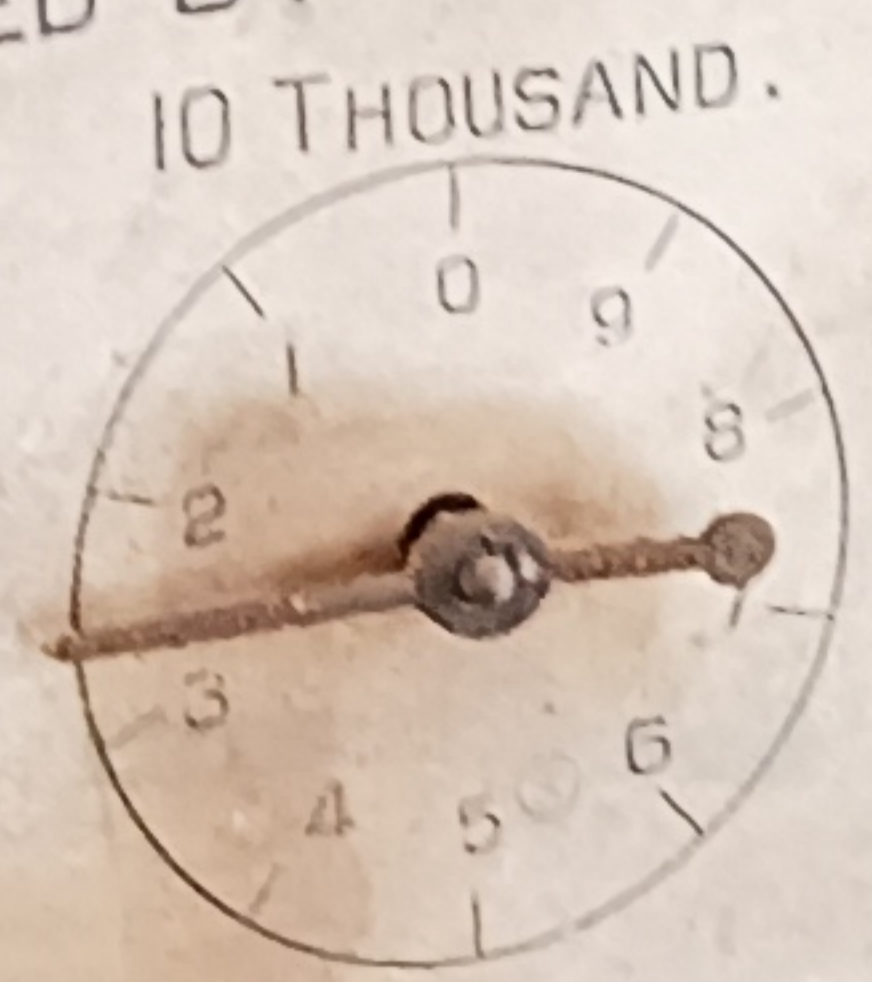
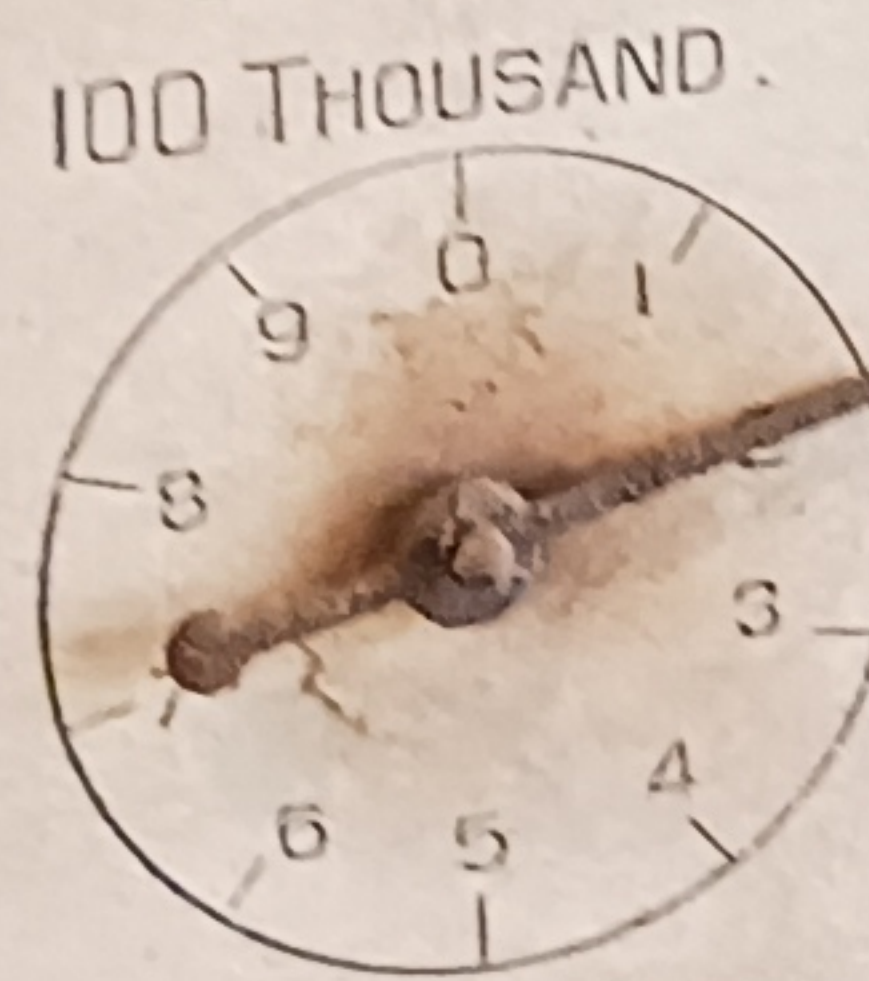
THOMSON ELECTRIC METER.
MANUFACTURED BY THOMSON-HOUSTON ELECTRIC CO.
100 THOUSAND 10 THOUSAND. 1 THOUSAND. 1 HUNDRED.
WATT - HOURS = DIAL READING x 52
Patented April 17, 1888. Patents applied for.



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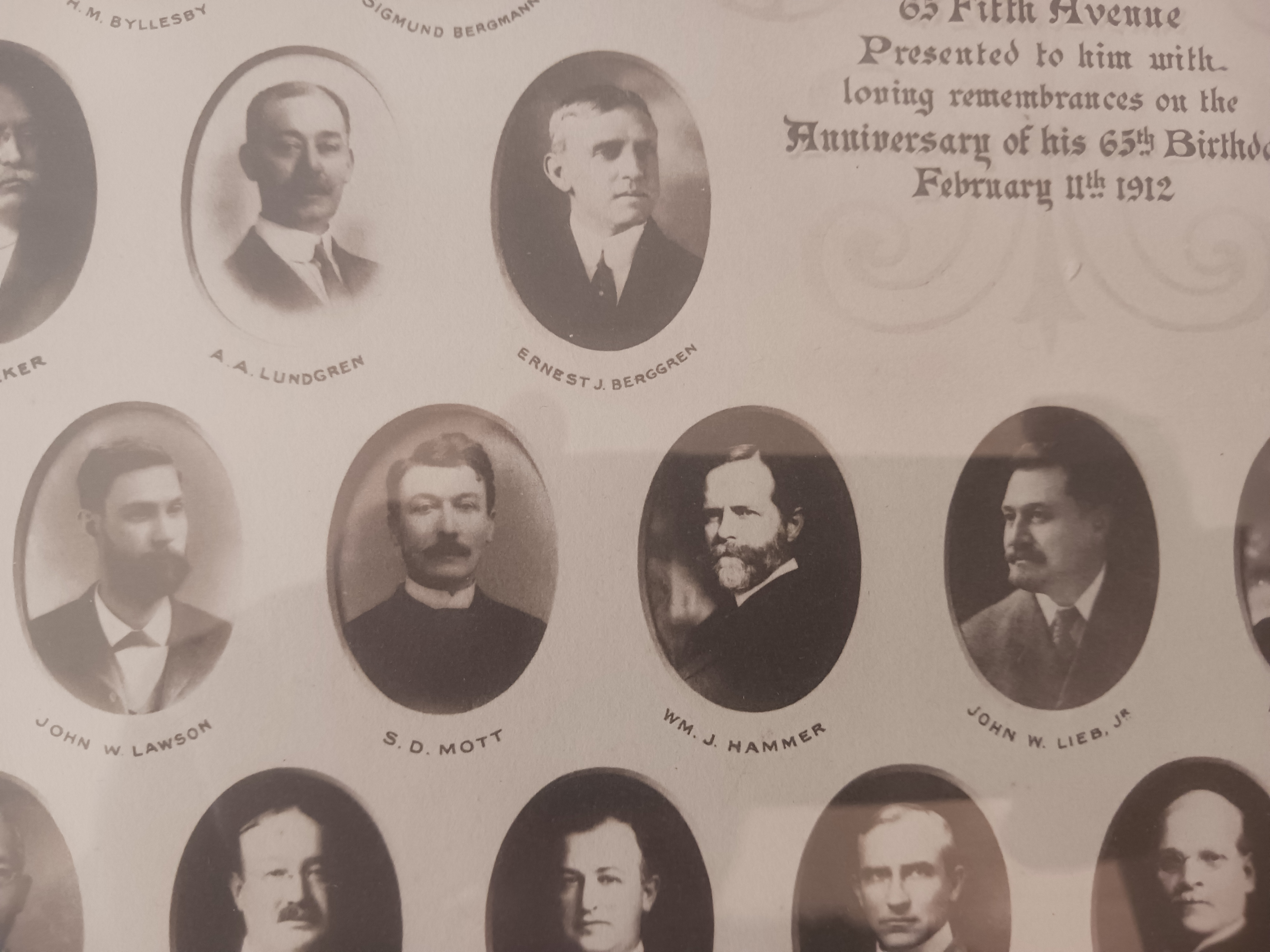




Thomas A. Edison
and
his associates of the days of
65 Fifth Avenue
Presented to him with
loving remembrances on the
Anniversary of his 65th Birthday
February 11th 1912

Thomas A. Edison





65 Fifth Avenue
Presented to him with
loving remembrances on the
Anniversary of his 65th Birthday
February 11th 1912

KER

A. A. LUNDGREN

ERNEST J. BERGGREN

JOHN W. LAWSON

S. D. MOTT

WM. J. HAMMER

JOHN W. LIEB, JR.



E. G. ACHESON



JOHN W. LAWSON



S. D. MOTT



K. IWADARI



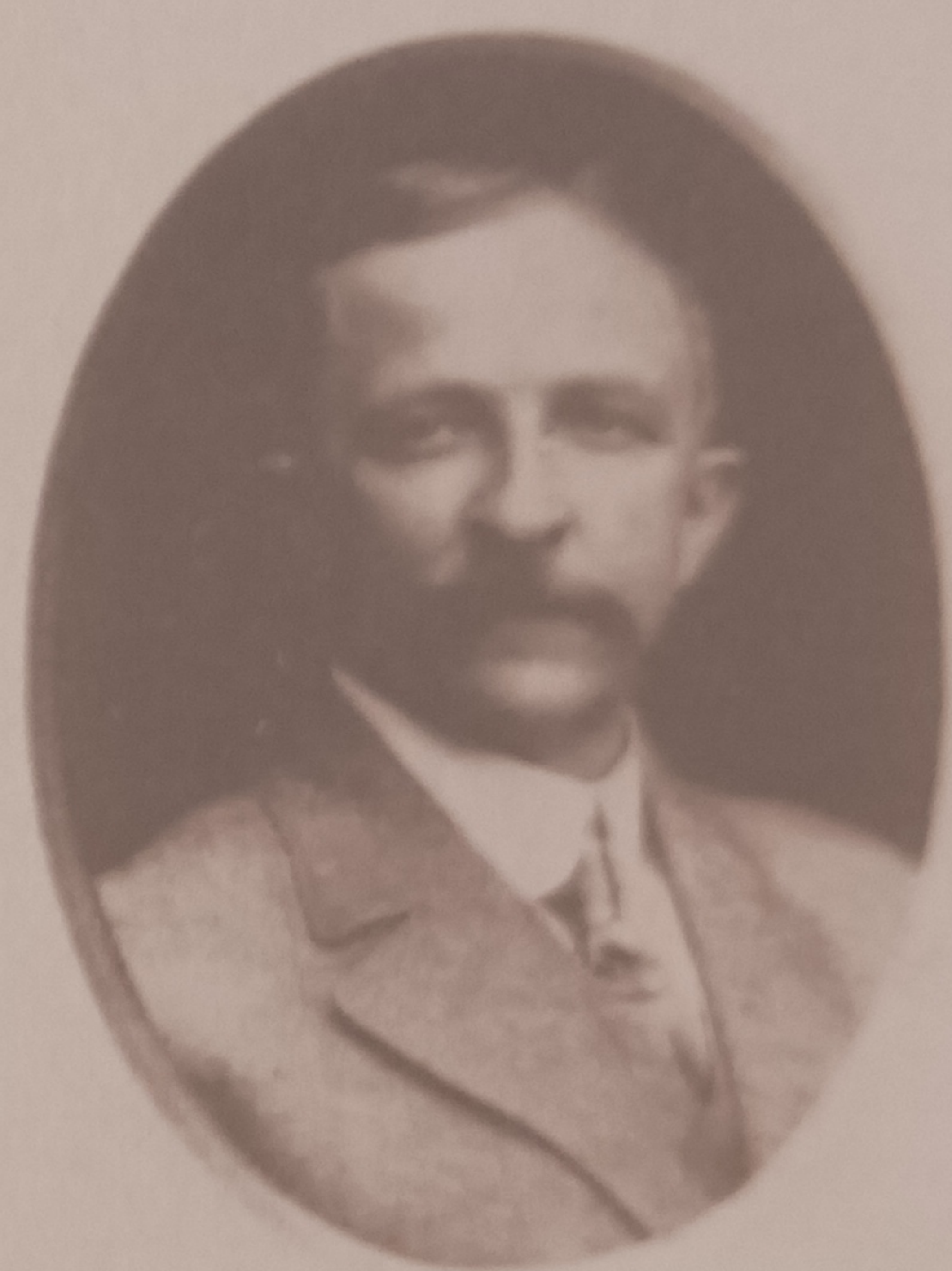
WILLIAM E. GILMORE



W. H. MILLER



D. MCFARLAN MOORE



A. D. PAGE

IMPORTANT

Below is a list of "Edison Men" who were connected with 35 7th Ave. General
& Co., The Columbia St. Shops and the Lamp Works at Haddon.
Kindly examine same closely and advise the undersigned immediately if you can
you may wish in the way your name is stated (if)

- | | | | |
|-------|--|--|--|
| ? | W. S. Andrews,
Gen'l Elec. Co.,
Schenectady, N. Y. | Richard N. Dyer,
21 Nassau St.,
N. Y. City. | Alfred W. Kline,
121 Broadway,
N. Y. City. |
| . | Henry Price Ball,
Gen'l Elec. Co.,
Schenectady, N. Y. | Maj. S. B. Eaton,
Edison, Lewis & Co.,
30 Church St., N. Y. City. | C. C. Y. King, Engineer,
Edison, Lewis & Co.,
30 Church St., N. Y. City. |
| | John I. Beggs,
St. Louis,
Mo. | Chas. L. Edgar, Pres.,
Edison, Lewis & Co.,
30 Church St., N. Y. City. | Philip H. ... |
| + | C. A. Benson,
110 W. 34th St.,
N. Y. City. | ... | ... |
| | Theodore Deane,
Gen'l Elec. Co.,
30 Church St., N. Y. City. | Charles Edelbrock,
Gen'l Elec. Co.,
30 Church St., N. Y. City. | ... |
| | Sigmund Bergmann,
Bergmann Elect. Works,
Berlin, Germany. | W. H. ... | ... |
| + | E. J. Berggren,
C/o Thomas A. Edison,
Orange, N. J. | ... | ... |
| + | A. S. Davis,
C/o F. S. Hastings,
39 Broadway, N. Y. City. | ... | ... |
| | E. T. Birdsell, | ... | ... |
| no. | Spencer Borden,
Fall River,
Mass. | ... | ... |
| + 2 - | R. R. Bowler,
33 W. 12th St.,
N. Y. | ... | ... |
| | W. F. Brewster,
Edison St.,
Chicago, Ill. | ... | ... |
| | A. E. Bush,
Gen'l Elec. Co.,
Schenectady, N. Y. | ... | ... |
| | Winthrop ... | ... | ... |
| ? | H. M. Rylands,
H. M. Rylands & Co.,
140 State St., Chicago, Ill. | ... | ... |
| aw | J. C. ... | ... | ... |
| | John Campbell, | ... | ... |
| | Charles Campbell, | ... | ... |
| | Will Garman, | ... | ... |
| | Geo. E. Garman, | ... | ... |
| | F. E. Chiswick, | ... | ... |
| | G. E. Chiswick,
107 3rd Ave., N. Y. | ... | ... |
| | Edward ... | ... | ... |
| + | ... | ... | ... |
| + | ... | ... | ... |
| | ... | ... | ... |

Edwards

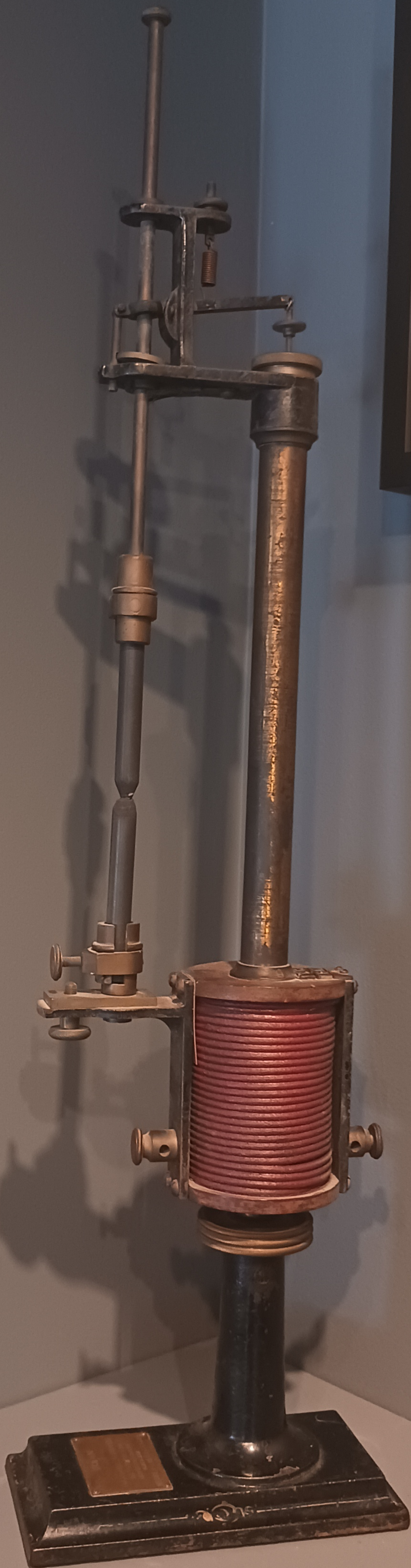
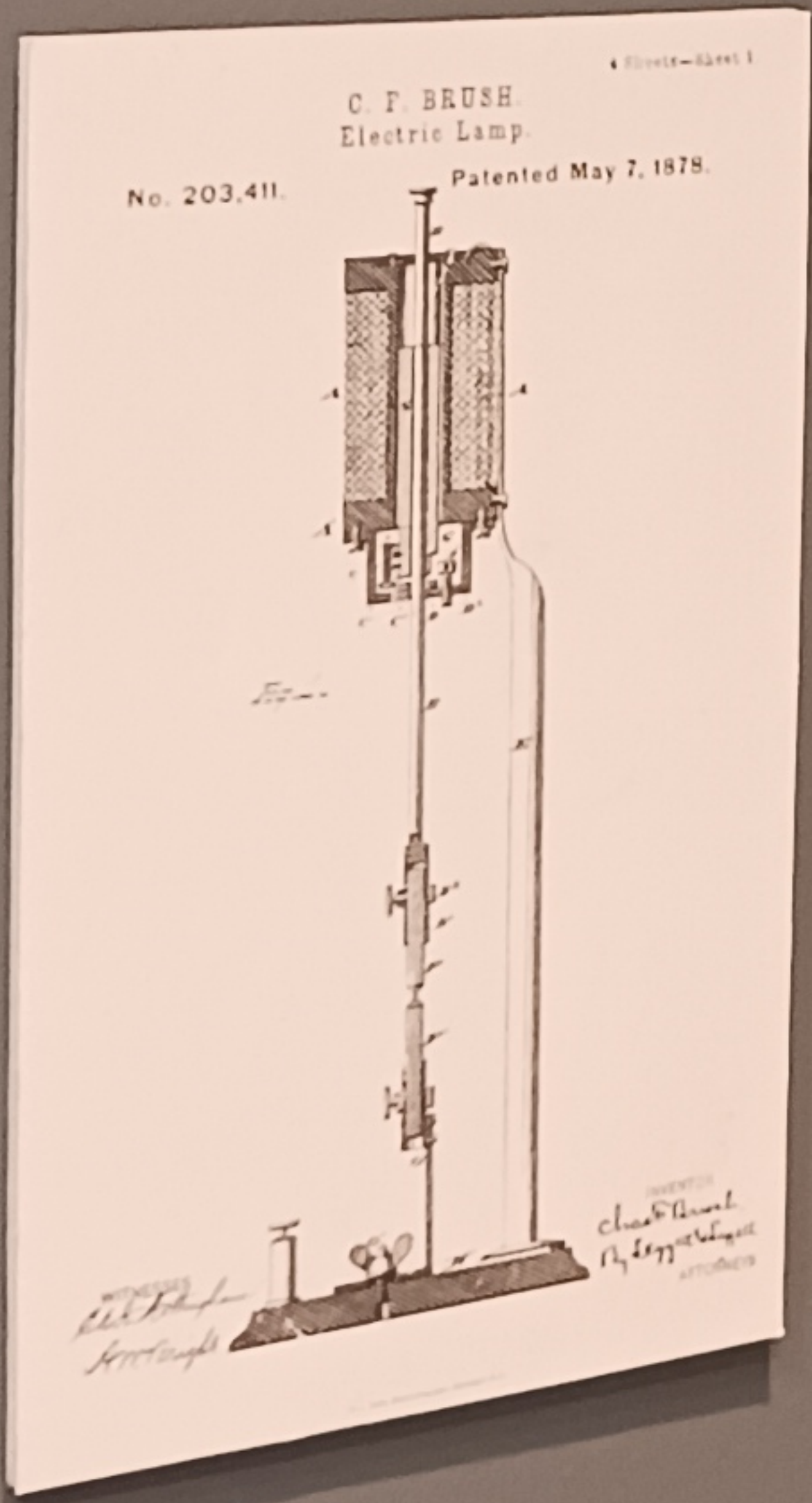
but Coffin

James Hill
111 E. 11th St.
New York

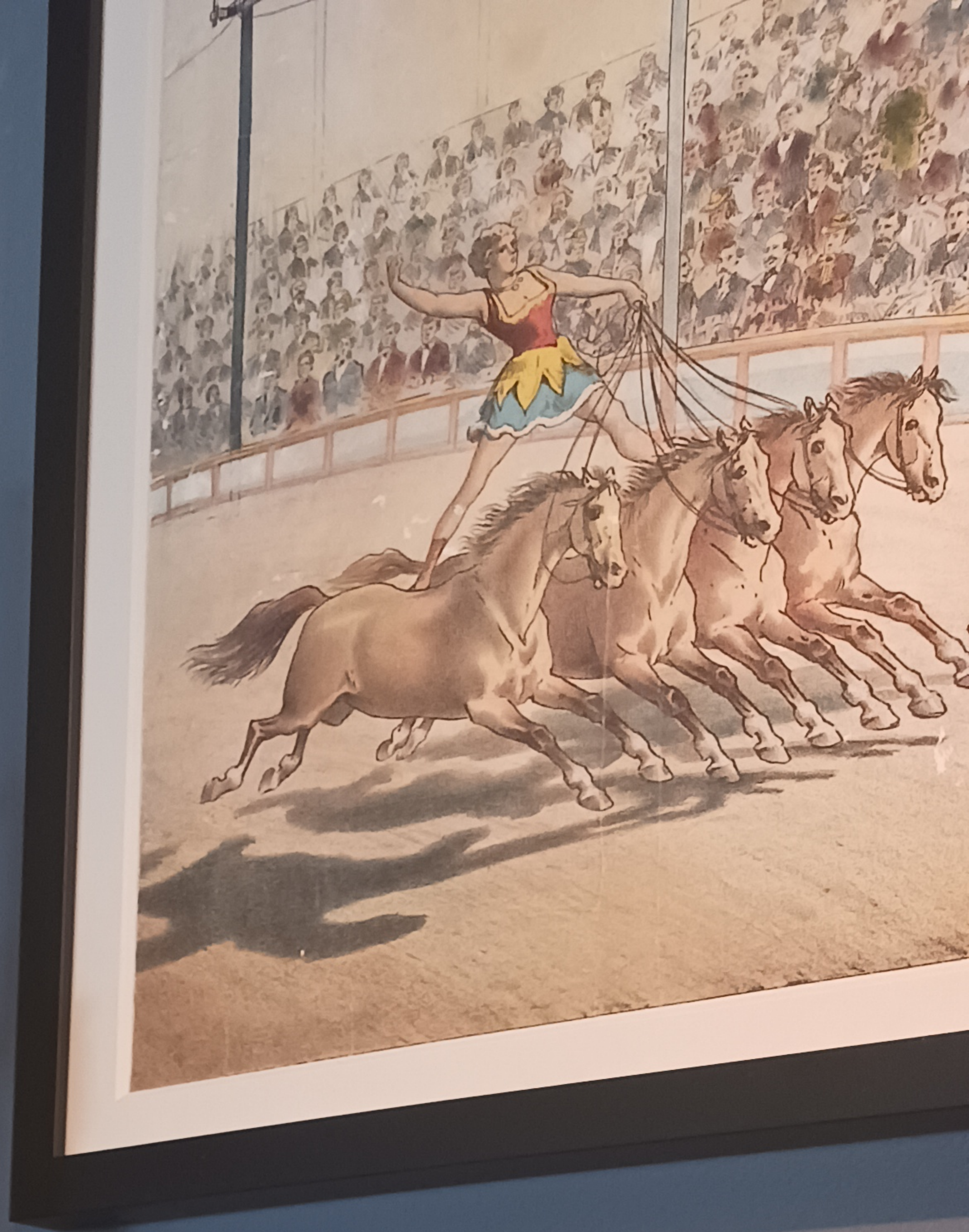
55 Duane St., N. Y. City.
+ T. Comerford Martin,
39 W. 39th St.,
N. Y. City.
W. H. Meadowcroft,
C/o. T. A. Edison,
Orange, N. J.
Y. City. Walter Miller,
C/o. T. A. Edison,
Orange, N. J.
+ S. Z. Mitchell, Pres.,
Elect. Bond & Share Co.,
71 Broadway, N. Y. City.
M. F. Moore,
Roselle Park, N. J.
+ D. McFarlan Moore,
169 Malvern St.,
Newark, N. J.
Howard A. McLean,
N.Y. City.
Geo. F. Morrison,
Gen'l Elec. Co.,
Harrison, N. J.
George Moseman,
Boston.
S. D. Mott,
Frederick A. Nicholls,
Canadian Gen'l Elec. Co.,
Montreal, Canada.
John H. Noble,
The Rodna, 125th St. &
Morningside Ave., N.Y. City.
August Nell,
Fred Ott,
C/o. Thomas A. Edison,
Orange, N. J.
John F. Ott,
C/o. Thomas A. Edison,
Orange, N. J.
+ A. D. Page,
Gen'l Elec. Co.,
Harrison, N. J.
+ Sidney B. Paine,
Gen'l Elec. Co.,
84 State St., Boston, Mass.
Frank A. Pattison,
Fuller Bldg.,
N. Y. City.
Wm. Pelzer,
Edison Mfg. Co.,
9th St. & 5th Ave., N. Y. City.
Joseph F. Porter, Pres.,
Tri-City Ry. & Lt. Co.,
Davenport, Iowa.
Chas. D. Shain,
P. B. Shaw,
Williamsport, Pa.
Paul Spencer,
U. G. I. Co.,
Broad & Arch Sts., Philadelphia, Pa.
C. S. Splitdorf,
138th St. & Walton Ave.,
N. Y. City.
Frank J. Sprague,
165 Broadway,
N. Y. City.
Daniel C. Spruance,
351 W. 114th St.,
N. Y. City.
Henry Stephenson,
C/o. N. Y. Edison Co.,
55 Duane St., N. Y. City.
A. O. Tate,
Tate Accumulator Co.,
Toronto, Canada.
Albert Taylor,
100 Broadway,
N. Y. City.
Nikola Tesla,
Metropolitan Life Bldg.,
New York City.
John C. Tomlinson,
15 Broad St., N. Y. City.
F. R. Upton,
Union Building,
Newark, N. J.
J. H. Vail,
Gen'l Vehicle Co.,
Long Island City.
Wm. B. Vansize,
463 West Street,
N. Y. City.
J. J. Van Vleck,
C/o. L. B. Stillwell,
100 Broadway, N. Y. City.
Montgomery Waddell,
1 West 101st St.,
N. Y. City.
A. K. Warren,
Monument Square,
Swampscott, Mass.
Peter Weber,
C/o. Thomas A. Edison,
Orange, N. J.
Dr. Schuyler B. Wheeler, Pres.,
Crocker-Wheeler Co.,
Amper, N. J.
J. G. White,
21 Exchange Place,
N. Y. City.
Chas. W. White,
12th & 13th Sts.,
Philadelphia, Pa.







Brush Arc Lamp - late 1879-early 1880

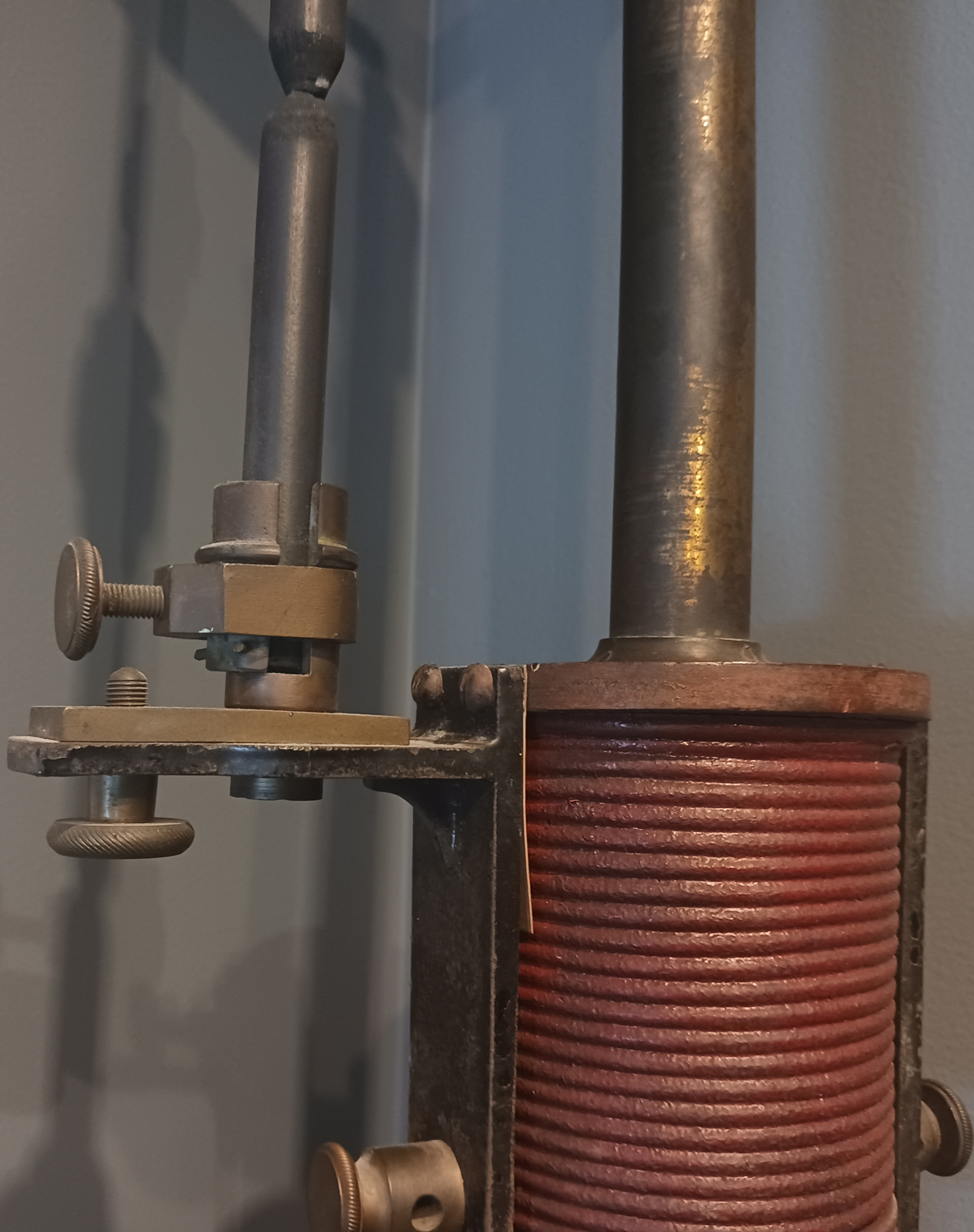




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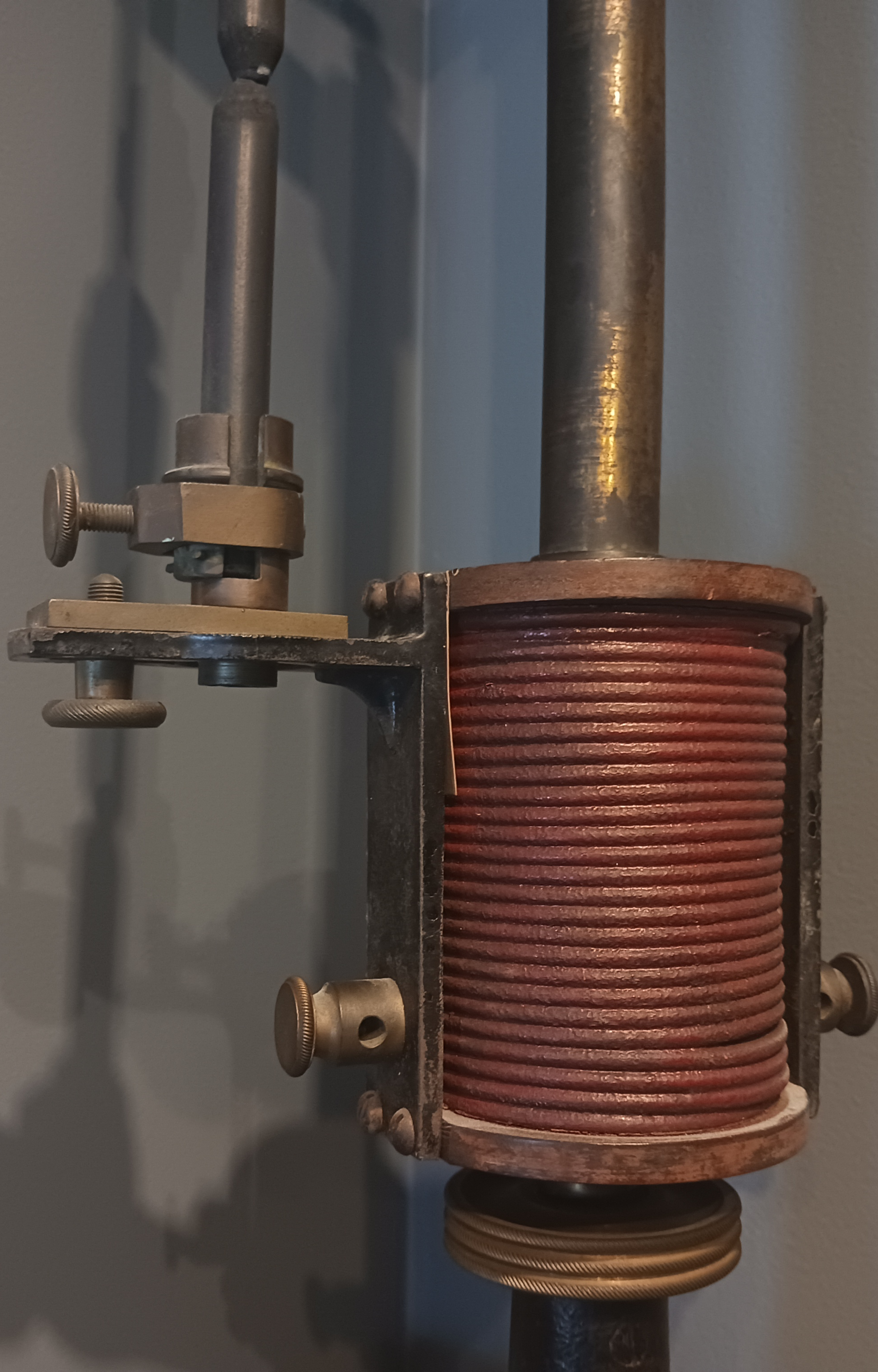
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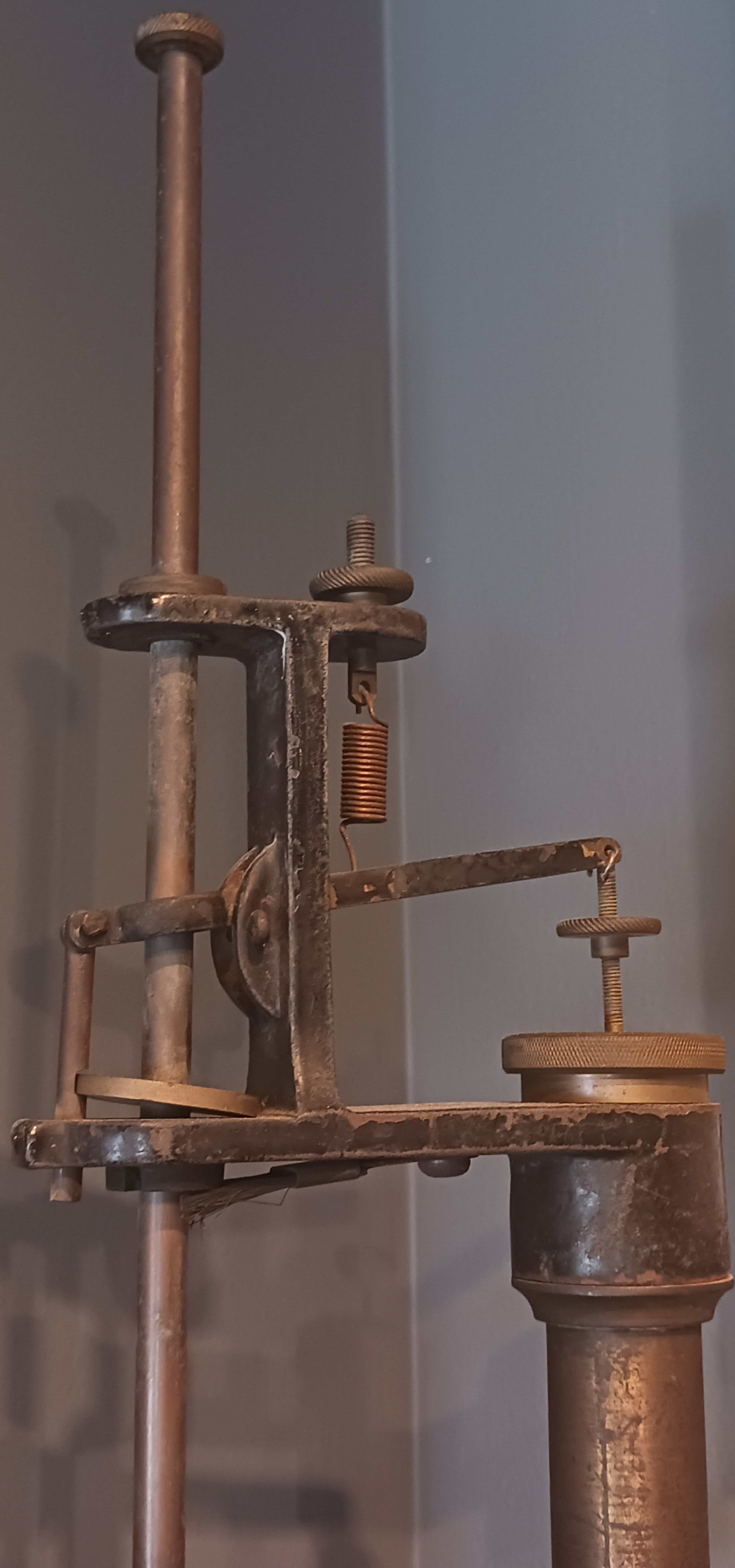
ah.
Seydell
NEYS



4 Sheets—Sheet 1.
May 7, 1878.

INVENTOR
Charles Brush
By Leggett & Leggett
ATTORNEYS





...ets—Sheet 1.

7, 1878.

INVENTOR
Charles B. Brown
By Leggett & Leggett
ATTORNEYS

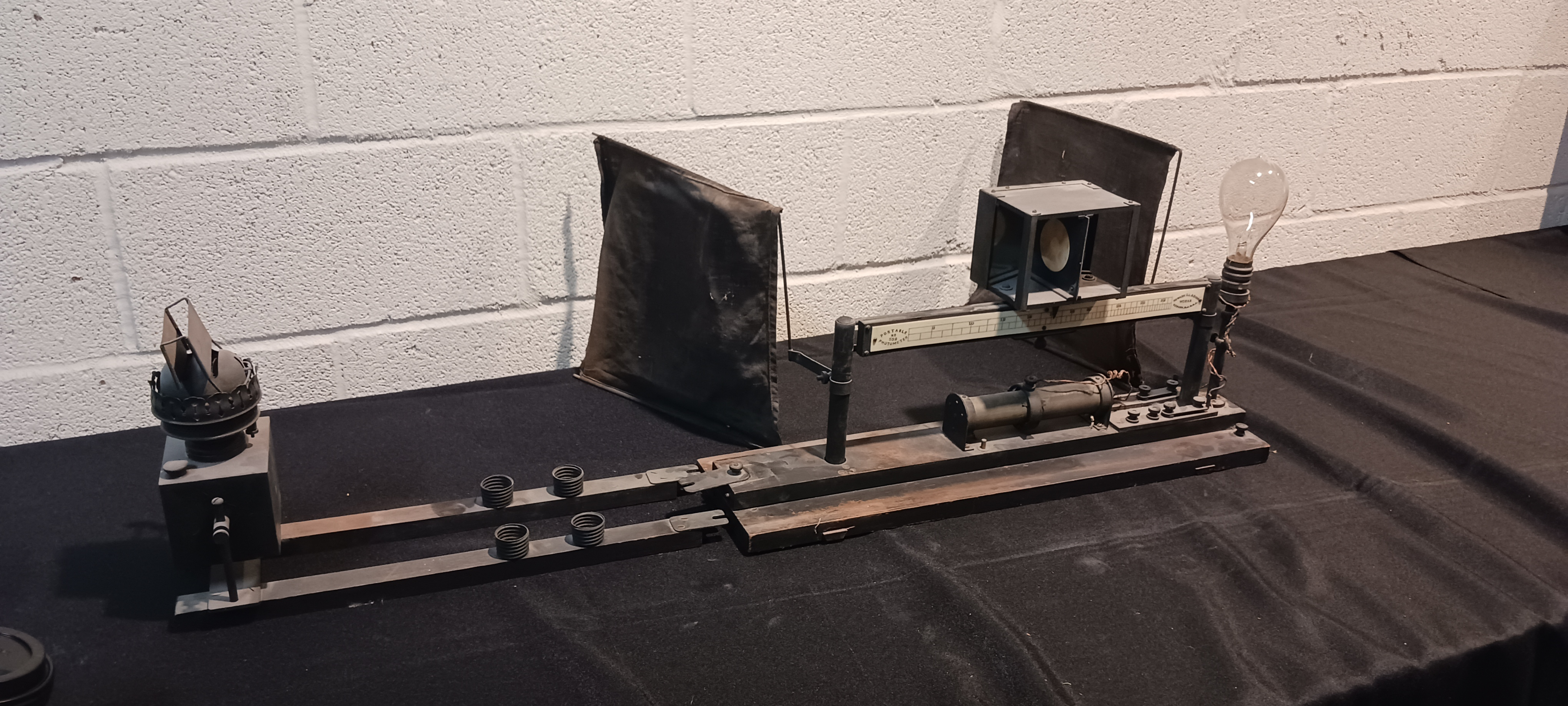




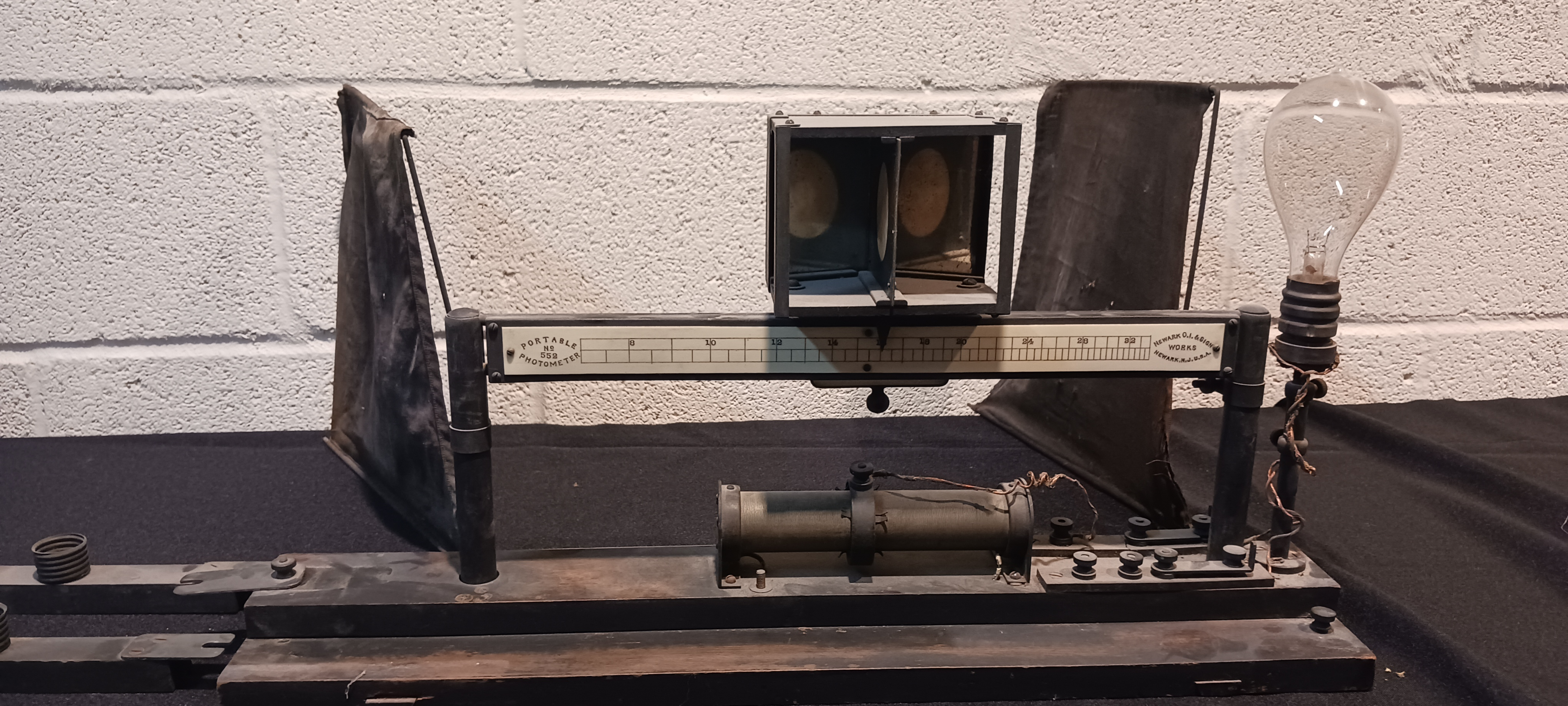
360
Kirkland
Crystal Clear
Cutlery











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PHOTOMETER

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NEWARK O.I. & SIGN
WORKS
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PHOTOMETER

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WORKS
NEWARK, N.J., U.S.A.